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CONTINUATION OF THE COORDINATING CENTER FOR FIRST-GRADE READING INSTRUCTION PROGRAMS. FINAL REPORT.

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DESCRIPTORS- *READING RESEARCH, *GRADE 2, *READING ACHIEVEMENT, *READING PROGRAMS, READING INSTRUCTION, METHODS RESEARCH, READING SKILLS, INITIAL TEACHING ALPHABET, LANGUAGE EXPERIENCE APPROACH, PHONICS, LINGUISTICS, BASIC READING, ORTHOGRAPHIC SYMBOLS,

THE RESULTS OF THE CONTINUATION OF THE COOPERATIVE RESEARCH PROGRAM IN FIRST GRADE READING INSTRUCTION AT THE END OF SECOND GRADE ARE REPORTED. THE SECOND-GRADE PHASE WAS CONCERNED WITH (1) THE EXTENT TO WHICH READINESS SKILLS ARE RELATED TO READING ACHIEVEMENT AT THE END OF SECOND GRADE, (2) HOW THE VARIOUS METHODS OF INSTRUCTION COMPARE IN EFFECTIVENESS WITH THE BASAL METHOD, AND (3) THE INFLUENCE ON SECOND-GRADE ACHIEVEMENT OF METHOD AND/OR MATERIALS. THE METHODS OF INSTRUCTION COMPARED WERE I/T/A, LINGUISTIC, LANGUAGE EXPERIENCE, PHONIC/LINGUISTIC, AND BASAL. CORRELATION WAS USED TO ANALYZE THE DATA. THE PREREADING ABILITY MOST HIGHLY RELATED TO SECOND-GRADE WORD RECOGNITION WAS KNOWLEDGE OF LETTER NAMES. THE ABILITY TO DISCRIMINATE BETWEEN LIKE AND UNLIKE BEGINNING AND ENDING CONSONANTS WAS HIGHLY RELATED TO SECOND-GRADE ACHIEVEMENT. INTELLIGENCE WAS A RELATIVELY GOOD PREDICTOR OF SECOND-GRADE WORD RECOGNITION ACHIEVEMENT. ADDITIONAL RESULTS, CONCLUSIONS, IMPLICATIONS, APPENDIXES, TABLES, AND A BIBLIOGRAPHY ARE INCLUDED. (BK)

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CONTINUATION OF THE COORDINATING CENTER FOR FIRST-GRADE READING INSTRUCTION PROGRAMS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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CONTINUATION OF THE
COORDINATING CENTER FOR FIRST-GRADE
READING INSTRUCTION PROGRAMS

Project No.: 6-1651

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Chapter I

INTRODUCTION

This report presents information pertinent to the second grade phase of the Cooperative Research Program in Primary Reading Instruction. Information about the first grade phase of the study was presented in an earlier report.*

The first grade phase of the study was designed to obtain information relevant to three questions: (1) To what extent are various pupil, teacher, class, school, and community characteristics related to pupil achievement in first grade reading and spelling? (2) Which of the many approaches to initial reading instruction produces superior reading and spelling achievement at the end of the first grade? (3) Is any program uniquely effective or ineffective for pupils with high or low readiness for reading?

The second grade phase of the study, which serves as the basis for this report, was concerned primarily with three questions: (1) To what extent are various pupil characteristics related to pupil achievement in reading, spelling, and language skills at the end of the second grade? (2) How do I.T.A., Linguistic, Language Experience, and Phonic/Linguistic programs compare in effectiveness with Basal programs at the end of the second grade? (3) What is the relative influence on second grade achievement of the project in which a pupil learns to read and the method and/or materials which comprise the instructional program?

Rationale

The rationale for the overall Cooperative Research Program in First Grade Reading Instruction was presented in the report of the first grade phase of the study:

> Every year hundreds of thousands of children begin the complex task of learning to read. For most children growth in reading is a successful undertaking. For many, however, the progress is slow, and for others learning to read appears to be an unobtainable accomplishment. There is a continuous search for new ways to teach reading which will prevent the difficulties these children encounter, thereby, enabling all

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* Bond, Guy L. and Robert Dykstra. "Final Report of the Coordinating Center for First-Grade Reading Instruction," U.S.O.E. Project X-001, Minneapolis: University of Minnesota, 1967.

children to become successful readers. Moreover, even for those children who have apparent success in learning to read, there is always the question of whether or not a different approach would have enabled them to become even more mature and diversified readers.

In recent years there have been suggested many new approaches to reading instruction. There have also been many questions raised about current methods of teaching reading. In fact, the teaching of beginning reading has been and continues to be a popular subject for debate among reading experts and the general public alike. Even though a great deal of research has been devoted to the problem, there are still a number of controversies concerning instructional procedures in beginning reading. Many new approaches to initial instruction have been formulated and implemented but have not been subjected to comparative research to any extent. Furthermore, most of the research has been conducted in a piece-meal fashion by independent investigators. As a result, comparisons among the individual studies have been difficult for a number of reasons:

1. Independent investigators have used different tests to measure reading readiness and reading achievement. Norming populations for the various tests may be quite different and as a result it is difficult to compare achievement of pupils whose reading ability has been assessed by different instruments.
2. The extent to which investigators have assessed and/or controlled such factors as experiential background of children, class size, teacher competence, enthusiasm for the teaching method employed and other such variables has varied from study to study.
3. Research designs and methods of statistical analysis have varied from study to study.
4. Evaluation of post-instructional reading ability has been incomplete and inappropriate.
5. Experimental guidelines such as length of instructional period have varied considerably in independent investigations. Furthermore, the length of some experimental periods has been inadequate for demonstrating long-range effects of approaches to initial reading instruction.
6. Methods, materials, and experimental populations have not been adequately described in order to make comparisons between studies possible.

The Cooperative Research Studies in First-Grade Reading Instruction were designed to overcome many of the difficulties listed. The unique contribution of this research program was its provision for coordination of a number of individual reading studies, thereby making possible the exploration of the relative effects on early reading growth of various approaches to initial reading instruction under similar experimental conditions.

Follow-up studies were conducted in many of the projects to assess the relative effectiveness of programs after two years of instruction. Assessing achievement at the end of the second grade made possible the determination of whether or not those programs which were superior in pupil achievement after one year of instruction maintained this superiority after a second year in the program. Pacing of vocabulary varies so much in first grade materials that differential achievement (especially word recognition) in programs at the end of the first grade may be largely a result of differential pacing. Therefore evaluation of achievement at the end of the second grade is of considerable interest.

Assessment of second grade achievement in the various programs was important for another reason. At the end of the first grade, many children who were taught in Initial Teaching Alphabet programs had not yet made the transition to traditional orthography. Therefore, evaluating their ability to read in traditional orthography at the end of the first grade was a questionable procedure. However, almost all of these pupils made the transition before the end of the second grade and a more valid assessment of their reading ability could be made.

It was likewise considered important to gather second grade data on pupils in the Linguistic and Phonic/Linguistic programs. Each of these programs controls vocabulary initially on the basis of sound-symbol correspondences. As a result, early instruction in reading utilizes only regularly represented words, those which have consistent sound-symbol relationships. Primary reading tests, however, often select vocabulary from lists of high frequency words, words selected not on the basis of their phoneme-grapheme correspondences but on the basis of their frequency of use in speaking and writing. The typical basal reading program utilizes these same lists of high frequency words and as a result the tests are more likely to be valid with respect to a basal reading program than a Linguistic program. However, by the end of the second grade most of the pupils in a "linguistic" series will have been introduced to the more irregular patterns and therefore pupils will more likely have been introduced to vocabulary utilized in a reading test. The results of the investigation presented in this report should give considerable information about the relative effectiveness of I.T.A., Language Experience, Linguistic, and Phonic/Linguistic programs as compared with traditional Basal readers.

Background

A group of reading research experts met at Syracuse University in 1959 to discuss ways to improve the quality of research in the field of reading. The participants were members of the Committee on Needed Research in Reading which was established by the National Conference on Research in English. This group concluded that the problems of beginning reading instruction should receive first priority.

In 1960 a second conference was held at the University of Chicago for the purpose of establishing guidelines for conducting a large-scale investigation of initial reading instruction. Plans were drawn for a cooperative research venture if support for the program could be obtained. In 1963 the Cooperative Research Branch of the U.S. Office of Education indicated its willingness to provide financial support and invited proposals dealing with primary reading instruction.

In 1964 another meeting of reading researchers was held at the University of Chicago. This meeting had as its goal the formulation of recommendations concerning the cooperative research program. Among other things participants recommended the establishment of a coordinating center which would facilitate communication among projects which were going to take part in the study.

The Coordinating Center for the Cooperative Research Program in First Grade Reading Instruction was established at the University of Minnesota in 1964. Furthermore, twenty-seven projects were selected for support by the U.S. Office of Education out of seventy-six proposals which were submitted. The projects were selected on the basis of their individual merit as self-contained studies but each project director also agreed to abide by common standards regarding experimental procedures and data collection. A brief description of each cooperating project in the first grade is presented in the final report of the project.

Thirteen of the twenty-seven projects were funded for a second year of investigation. In addition, two more of the first grade projects, although not funded by the U.S. Office of Education for a follow-up, obtained funds elsewhere and made their data available to the Coordinating Center for analysis at the end of the second grade. A description of these fifteen projects is presented in Chapter III. The Coordinating Center, therefore, collected complete data on each of the pupils involved in fifteen different projects scattered around the country. Data include measures of readiness for reading, first grade achievement in reading, spelling, and related language skills, and second grade achievement in these same areas. In addition, a great deal of information about teachers of these pupils, the classrooms and schools in which they were enrolled, and the communities in which they lived is also available in the final report of the first grade study.

Organization of the Report

A brief summary of findings from the first-grade study is presented in Chapter II. Chapter III presents an overview of each project which participated in both the first grade and second grade phases of the study. A discussion of experimental procedures is presented in Chapter IV. Chapter V reports correlation relationships between reading readiness scores and second grade achievement as well as between first grade and second grade achievement in reading, spelling, and related language skill. The analysis of various reading programs is reported in Chapter VI. An analysis designed to compare the relative influence of instructional materials and the school system in determining the reading ability of second grade pupils is presented in Chapter VII. Chapter VIII reports a summary of the study and the conclusions. Descriptive data and tables not directly relevant to the discussion are presented in the appendices to this report.

Chapter II

REVIEW OF THE LITERATURE

A comprehensive review of studies dealing with instruction in methodology in primary grade reading is presented in the review of the literature section of the final report of the first grade phase of this project. The review reports studies involving the Initial Teaching Alphabet, various phonic methods, linguistic methods, individualized methods, and language experience approaches. The review also discusses sex differences in reading. Rather than to repeat the review of the literature in this report, the results of the first grade phase of the Cooperative Research Program in First Grade Reading will be presented. This will make possible a comparison of the relative effectiveness of a program after the first grade and after the second year of instruction. In the discussion of first grade results which follows, the effectiveness of each of the innovative programs will be compared with the effectiveness of the more typical basal program utilized in the same project. The discussion will center in turn on a comparison of I.T.A. and Basal programs, Basal programs supplemented with phonics materials and Basal programs alone, Language Experience approaches and Basal programs, Linguistic programs and Basal programs, and Phonic/Linguistic and Basal programs.

Information is also presented concerning the relative influence on pupil achievement in the first grade of instructional methodology or materials and the school system in which a child receives instruction. In this analysis, each treatment within each individual project was considered a separate treatment and the means for each treatment were ranked. The means were studied to determine (1) whether or not similar treatments such as I.T.A. resulted in similar achievement across projects or (2) whether or not all treatments within a given project were similar.

One other purpose of the first grade study was to determine whether or not the various primary reading programs were especially effective or ineffective for pupils with varying degrees of auditory discrimination, intelligence, or letter knowledge. Findings pertinent to this aspect of the study are also presented in the summary.

The section which follows also presents the findings of a correlation analysis. The first grade study assessed the relationships between measures of reading readiness and measures of achievement in first grade reading and spelling. Relationships were also assessed between word recognition tests of high-frequency words and phonetically regular words and between tests of word recognition and reading comprehension.

The summary of the first grade study also discusses general findings concerning sex differences in readiness and achievement. A great deal of information is provided about the relative learning ability of first grade boys and girls. Information is also presented about project differences in pupil readiness and pupil achievement.

Results of the First Grade Phase of the Cooperative Research Program

This study was designed to obtain information relevant to three basic questions. (1) To what extent are various pupil, teacher, class, school, and community characteristics realted to pupil achievement in first grade reading and spelling? (2) Which of the many approaches to initial reading instruction produces superior reading and spelling achievement at the end of the first grade? (3) Is any program uniquely effective or ineffective for pupils with high or low readiness for reading?

Analysis of Relationships

The findings of the investigation relevant to question one can be summarized as follows:

(1) The single best predictor of first grade reading success among the premeasures used in this investigation was the Murphy-Durrell Letter Names Test. This test correlated between .52 and .60 with both the Stanford Word Reading and Stanford Paragraph Meaning subtests for each of the six treatments used in the investigation.

(2) The Murphy-Durrell Phonemes and the Pintner-Cunningham Primary Test also correlated relatively well with the criterion measures. Each of these tests correlated .40 or greater with both the Word Reading and Paragraph Meaning subtests for each of the six treatments.

(3) The other readiness tests used in this study correlated positively with the reading measures but to a smaller extent. Correlations with reading were usually .40 or less for these premeasures.

(4) For the subtests with the best predictive ability (Letter Names, Phonemes, Pintner-Cunningham) there was little evidence of differential prediction of reading success in the programs used in this study. Correlations between these premeasures and reading were very similar for pupils in the Basal, I.T.A., Basal plus Phonics, Language Experience, Linguistic, and Phonic/Linguistic groups.

(5) A correlation coefficient of .86 was found between the Fry Test of Phonetically Regular Words and the Gates Word Pronunciation Test for the Basal treatment. Each of these tests was administered individually to a sample but they differed in the degree to which words were controlled on the basis of sound-symbol regularity. The Fry Test consisted of words with high regularity while the Gates Test consisted of words selected on the basis of frequency of usage with no control of sound-symbol relationship. Furthermore, the Word

Reading subtest from the group-administered Stanford Achievement Test correlated .72 with the Fry Word List and .78 with the Gates Word Pronunciation Test for the Basal group. Correlations for the treatments other than Basal were very similar.

(6) For the range of class sizes reported in this study there was a negligible correlation between class size and reading achievement. Furthermore, in this study pupil absence and child age were negatively related to the various reading measures. However, these correlations were also negligible with the largest of them being -.22.

(7) The total experience of teachers correlated between .24 and .34 with the five Stanford Achievement measures. Teacher experience in the first grade correlated between .20 and .30 with the same measures. A rating of general overall teacher efficiency correlated between .10 and .22 with the five achievement measures.

(8) The accuracy score on the Gilmore Oral Reading Test correlated between .81 and .90 with the Gates Word Pronunciation Test for the various reading programs.

(9) The Stanford Word Reading Test, a measure of word recognition, and the Stanford Paragraph Meaning Test, a measure of comprehension, correlated between .71 and .83 for the various programs.

Analysis of Methodology

The relative effectiveness of the various instructional programs utilized in this investigation was evaluated in two different ways. The major technique was to compare various non-basal programs with basal programs used in the same project. The newer experimental programs were thereby evaluated by comparing their relative effectiveness with that of the well-known basal reading programs. This analysis was considered the appropriate one to be used in the study. However, an analysis was also conducted whereby each treatment within each project was compared with all the other treatments in all of the other projects. In this latter analysis, pupil differences in readiness among the various treatments and projects were adjusted by means of covariance as were teacher differences in experience. Because of tremendous project differences in achievement even after teacher and pupil characteristics had been controlled statistically, this method of analysis was presented for informational purposes only. However, each of these two analyses presented a number of interesting findings.

Summary of Findings from Basal versus Non-Basal Comparisons

The findings of the Basal versus I.T.A., Basal versus Basal plus Phonics, Basal versus Language Experience, Basal versus Linguistic, and Basal versus Phonic/Linguistic treatment comparisons can be summarized as follows.

Summary of Basal versus I.T.A. comparisons. The I.T.A. and Basal approaches were of approximately equal effectiveness in terms of pupils' achievement on the Paragraph Meaning test. However, the I.T.A. treatment produced superior word recognition abilities as measured by the Word Reading subtest of the Stanford and the Fry and Gates word lists. Evidence concerning the spelling ability of pupils in the two groups was inconclusive. The Basal subjects were superior in spelling ability in three projects but the I.T.A. subjects were superior in a fourth project. No differences were found between treatments in reading accuracy and rate as measured by the Gilmore Oral Reading Test.

Summary of Basal versus Basal plus Phonics comparisons. In general, Basal programs accompanied by supplementary phonics materials produced significantly greater achievement in reading than did Basal materials alone. This superiority was especially pronounced in the across-projects analysis of mean performance on the Stanford Achievement tests and the Fry and Gates word recognition tests. Practically all differences on these measures favored the Basal plus Phonics group even though some of the differences failed to reach statistical significance. No differences in rate or accuracy of oral reading were found between the two treatments.

Summary of Basal versus Language Experience comparisons. Relatively few significant differences were found between the Language Experience and Basal approaches. Those significant differences which were found to exist generally favored the Language Experience approach. However, these sporadic differences were often not of much practical significance in terms of actual reading achievement.

Summary of Basal versus Linguistic comparisons. The most common finding for the Linguistic versus Basal comparison in the various projects was that of no difference between treatments. However, the Linguistic group tended to out-perform the Basal group on tests of word recognition while the Basal group exhibited somewhat greater speed and accuracy in reading. No differences in comprehension were ascertained.

Summary of Basal versus Phonic/Linguistic comparison. The Phonic/Linguistic program was superior to the Basal program utilized in the projects of this investigation. The Phonic/Linguistic program produced pupils with superior word reading, paragraph meaning, spelling, and word study skills. Phonic/Linguistic pupils were also superior on the Fry Test of Phonetically Regular Words and the Gates Word Pronunciation Test. No significant differences were found in rate or accuracy of oral reading.

General findings. In general, there was less difference in variability among treatments than in mean achievement among treatments. Standard deviations on each of the outcome measures were very similar for the Basal, I.T.A., Basal plus Phonics, Language Experience, Linguistic, and Phonic/Linguistic pupils. Furthermore, the interclass variation within the various treatments was very similar except for the Language Experience approach. Wide differences in mean achievement of classrooms were found for all of the programs. However, the range between the highest and lowest average class achievement in the Language Experience approach generally was greater than the range for the Basal classrooms in the same project.

Another general finding was that girls tended to have a greater degree of readiness for reading at the beginning of first grade and tended to read at a higher level of reading at the end of the first grade. In most cases differences in reading achievement which favored girls at the end of the year disappeared when criterion scores were adjusted for differences in prereading ability. A related finding in this investigation was that none of the treatments had a unique effect on the achievement of boys and girls. That is, no significant sex by treatment interactions were found to exist. On the average, girls tended to be better readers in all programs.

One of the most striking findings was the persistence of project differences in reading achievement even after adjustments were made statistically for differences in pupil readiness for reading. Evidentally reading achievement is influenced by factors peculiar to school systems over and above differences in prereading capabilities of pupils.

One other common finding was that statistically significant treatment by project interactions were found in most of the Basal versus Non-Basal comparisons. In general, treatments did not operate in the same fashion across projects.

Summary of the Findings of the Combined Analysis

The covariance analysis which considered each treatment within each project to be unique reported the following results:
(1) The project within which a method was studied had a greater influence on its location in rank among all the project treatments than did the specific method of instruction. This project influence existed even when differences in pupil readiness and teacher experience were adjusted by means of covariance.
(2) A comparison of the five most successful projects in terms of pupil achievement with the five least successful projects revealed certain significant differences between the two groups. For example, supervisor ratings of class structure, class participation, awareness

of and attention to individual needs, and overall competence of the teachers of the most successful projects were all significantly higher than were those for the teachers of the least successful projects. Furthermore, the most successful projects had a significantly greater per cent of teachers who had more than a standard teaching certificate than did those in the bottom-ranked projects.
(3) The projects which ranked highest had, on the average, a longer school day than did the projects which ranked lowest. The smaller average class size (28.2 to 24.2) also favored the more successful projects.
(4) No marked differences were found in community characteristics of the two extreme groups of projects except that the least successful projects had significantly more classrooms in rural areas.
(5) The ranking of the treatments within projects for boys and girls showed that the order of the treatments was surprisingly similar. The boys' performance tended to be lower than the girls' but the order was quite uniform.

Analysis of Treatment by Readiness Level

In this section of the analysis pupils were blocked in turn according to levels of ability as measured by an intelligence test, an auditory discrimination test, and a test of letter knowledge. Interactions between treatments and each of these readiness measures were examined to determine whether or not there was a differential treatment effect for pupils of varying levels of readiness.

Summary of Findings

For four of the five Basal versus non-Basal comparisons there was no evidence of differential treatment effects for various levels of intelligence, auditory discrimination or letter knowledge. Very few, if any, significant treatment by intelligence, treatment by auditory discrimination, or treatment by letter knowledge interaction effects were found to be significant. This finding of no interaction between treatment and readiness characteristics generally held true for the Basal versus I.T.A., Basal versus Basal plus Phonics, Basal versus Linguistic, and Basal versus Phonic/Linguistic comparisons.

A somewhat different situation existed for the Basal versus Language Experience comparison. For this treatment comparison a number of treatment by intelligence, treatment by auditory discrimination, and treatment by letter knowledge interactions were found to be significant. The interactions resulted form the fact that the least mature pupils achieved better in a Basal program than in a Language Experience approach, while more capable students with respect to these skills profited more from a Language Experience approach. This finding was tempered by the fact, however, that the low readiness

Basal pupils were generally superior to the low readiness Language Experience pupils on premeasures other than the one used for blocking. Therefore, it was not surprising to find that they were superior in achievement. On the other hand, the high readiness Basal pupils were inferior to the high readiness Language Experience pupils on premeasures other than those used for blocking. It is possible that the treatment by readiness interaction on the achievement measures was primarily a result of similar interaction on the premeasures.

Chapter III

AN OVERVIEW OF THE INDIVIDUAL STUDIES

Each of the twenty-seven studies which comprised the first grade phase of the Cooperative Research Program in First Grade Reading Instruction was a complete study in itself. Each was selected on the basis of its potential for yielding valuable information about the teaching of beginning reading. The unique characteristic of the cooperative research program, however, was that each project director, in addition to carrying out his own analysis, made the data available to the Coordinating Center so that an analysis across projects could be conducted. The results of this analysis are presented in the final report of Project X-001. In addition, a short description of each of the twenty-seven projects is provided in that report.

Thirteen projects were selected to conduct follow-up studies during the second grade phase of the investigation and were funded by the U.S. Office of Education for that purpose. These thirteen studies generally were concerned with evaluating the relative effectiveness of various methods for teaching primary reading. This chapter presents a brief overview of the general design of each of these thirteen projects. Information is also presented about two additional projects which were not funded by the U.S. Office of Education for a follow-up study but which obtained funding elsewhere and made their data available to the Coordinating Center for analysis. In the sections of the chapter which follow, therefore, a description of the fifteen participating projects in the second grade phase of the study will be provided. The description is, in each case, a general overview of each study.

Only ten of the fifteen projects which collected second grade data were used in the analysis conducted by the Coordinating Center. One project was eliminated because deviations from the prescribed data card format made it impossible to collate data for first and second grade pupils. The other four projects were eliminated for reasons outlined in Chapter VI. Results of the five projects not discussed in this report are available in the final reports of the projects in question.

Comparison of the Basal and the Coordinated Language-Experience Approaches in First Grade Reading Instruction: Project 2729; Donald L. Cleland, Director; University of Pittsburgh.

The objective of the project was to determine the effects and outcomes of teaching beginning reading to superior pupils from three levels of social strata by two different methods. The study included superior pupils assigned to twenty-four classrooms. Twelve classes used the basal reader approach to first grade reading instruction and twelve classes used the coordinated language-experience approach.

Supplementary materials to enrich the program for superior pupils were used in the group using the basal reader appraoch. The coordinated language-experience approach emphasized oral expression of ideas and utilized the stories told by the children, retaining as nearly as possible the language patterns of the children. Later in the program, self-selection of reading materials was permitted and use was made of teacher-made worksheets and programed self-corrective type materials for reinforcement of needed skills.

First Grade Reading Instruction Using Diacritical Marking System, Initial Teaching Alphabet and Basal Reading System: Project 2745; Edward B. Fry, Director; Rutgers-The State University, New Brunswick, New Jersey.

This project compared three methods of beginning reading instruction using twenty-one first grade classrooms from three middle class suburban school districts in central New Jersey. Two of the methods under investigation were a diacritical marking system, developed by the principal investigator, and the Initial Teaching Alphabet--writing systems which offered greater regularity than the traditional writing system. The material for the third method was a traditional set of basic reading texts.

The materials used for the I.T.A. group were the Early to Read Series by Albert Mazurkiewicz and Harold Tanyzer. The Diacritical Marking System classes used the Sheldon Readers with diacritical marks superimposed on the words. The traditional set of basic reading texts used was the Sheldon Readers.

A Study of the Relative Effectiveness of Three Methods of Teaching Reading in Grade One: Project 2687; Harry T. Hahn, Director; Oakland Schools, Pontiac, Michigan.

This study was designed to test the effectiveness of three approaches to teaching first grade reading: the language arts approach, the Initial Teaching Alphabet, and the basic reader approach. In twelve school districts one classroom was assigned to each of the three approaches. Thus the study comprised thirty-six classrooms in which children were matched on the basis of performance demonstrated in kindergarten as well as on socio-economic status.

The language arts approach encouraged individual expression through a variety of media. After a firm language-experience relationship was established, a balance of directed group reading and individualized reading was included. The I.T.A. approach employed materials prepared for schools in England plus some structured materials prepared from Initial Teaching Alphabet Publications, Inc. The basic reader approach used controlled vocabulary and systematic instruction procedures in basic reading texts and workbooks normally found in a first grade classroom.

Comparing Reading Approaches in First-Grade Teaching with Disadvantaged Children (The CRAFT Project): Project 2677; Albert J. Harris and Blanche L. Serwer, Investigators; The Research Foundation of The City University of New York.

The project compared the relative effectiveness of two major approaches to teaching reading to disadvantaged urban children: (1) the skills-centered approach, and (2) the language-experience approach. Each of these was tried with two variations, making four treatment methods in all. These four treatment methods were as follows: (a) a skills-centered method using basal readers, with close adherence to the instructions contained in the teacher's manuals; (b) a skills-centered method utilizing basal readers, but substituting the phonovisual method of teaching word-attack skills for the word-attack lessons accompanying the basal reader; (c) a language-experience method, in which the beginning reading materials were developed from the oral language of the children; and (d) a language-experience method with heavy supplementation of audio-visual procedures.

Twelve elementary schools, each with a very high percentage of Negro children and a minimum of six first-grade classes, were selected for the study. There was random assignment of the four methods to schools, two methods to each school.

An Attempt to Secure Additional Evidence Concerning Factors Affecting Learning to Read: Project 2697; Robert B. Hayes, Director; Department of Public Instruction, Harrisburg, Pennsylvania.

The project sought to refine, extend, and strengthen knowledge of beginning reading by comparing methods and materials in four approaches. The four programs and the materials used were: (1) an eclectic, "whole word" reading program as represented by the Scott, Foresman Company, 1960 edition; (2) a "phonic" reading program as represented by the J. B. Lippincott Company, 1963 edition; (3) a combination eclectic, "whole word-phonic" reading program as represented by Scott, Foresman materials, 1960 edition, supplemented with the Phonics and Word Power, 1964 edition; (4) a language arts approach using the Initial Teaching Alphabet as a medium, represented by the i/t/a Publications, Inc., 1963 edition.

Ten elementary schools and twenty first grades were selected for the study.

A Comparative Study of Two First Grade Language Arts Programs: Project 2576; William M. Kendrick, Director; Department of Education, San Diego County, San Diego, California.

This study sought to determine the relative effectiveness of the experience approach to the teaching of the language arts as compared with the traditional method. To accomplish this, four areas of the language arts were separately measured--namely, reading, writing, listening, and speaking. In addition, an index of development in reading interest was taken and pupil attitude toward reading determined.

The experience approach used the language and thinking of individual children as the basis for skill development. The traditional method group adhered very closely to the teacher's manual for each reader in the Ginn Series as a guide to instructional procedures. Fifty-four teachers, twenty-seven for each treatment group, participated in the study. The pupil population of the study came from forty-one elementary schools of seventeen school districts located in various parts of San Diego County.

First Grade Reading Using Modified Co-Basal Versus the Initial Teaching Alphabet: Project 2676; Albert J. Mazurkiewicz, Director; Lehigh University, Bethlehem, Pennsylvania.

This project compared reading achievement at the end of first grade of two matched groups. Both groups used the language arts approach: one used co-basal materials printed in traditional orthography while the other used the Initial Teaching Alphabet materials. The study included thirty first grade classrooms divided into two groups of fifteen classes each matched on the basis of intelligence.

The hypothesis tested was that method rather than medium is responsible for the differences in reading achievement, and that if method is controlled no significant differences in reading achievement would be found.

Evaluation of Three Methods of Teaching First Grade Reading to Children Likely to Have Difficulty with Reading: Project 2702; Olive S. Niles, Director; Springfield Public Schools; Massachusetts Department of Education, Boston, Massachusetts.

The project attempted to determine whether first grade children who have been identified by a series of tests as likely to have greater than usual problems in learning to read could be helped most effectively by (a) using the regular basal program which is used by all other children in their classroom; (b) using the regular basal program together with remedial teacher time assigned to serve the class of which they are a part; (c) using materials other than the regular basal program which is used by the other children in the class; or (d) using a combination of remedial teacher time and materials other than the regular basal program.

One group had a supplementary remedial teacher. The remedial teacher worked with the regular classroom teacher, giving special attention to children in thepotential problem group. Regular basal readers were used.

Another group was provided with special materials for the potential problem group. The children were given thorough instruction with a set of readiness materials. When they achieved success with these, they were put into library-type or trade books rather than basal readers.

The third group was provided with both the additional teacher time and the use of the special materials.

The fourth group was the control group. No changes were made in procedures and the regular basal program was used.

The Effect of Different Approaches of Initial Instruction on the Reading Achievement of a Selected Group of First Grade Children: Project 2698; Hale C. Reid, Director; Cedar Rapids Public Schools; State University of Iowa, Iowa City, Iowa.

In this study, seven methods of teaching reading to the low reading group in forty-five classrooms were compared. In each classroom,

an average of eight pupils were in the lowest reading group. The seven methods were
(1) a language method involving reading, writing, listening, and speaking,
(2) a method involving recognition of letters and their sounds and the use of context clues,
(3) a functional approach built around easy-to-read books,
(4) Skills Development Method,
(5) a combination of Method I, language, and Method II, letter sounds,
(6) a combination of Method I, language, and Method III, literature,
(7) a combination of Method I, language, and Method IV, Skills Development.

The Effect of Four Programs of Reading Instruction with Varying Emphasis on the Regularity of Grapheme-Phomeme Correspondences and the Relation of Language Structure to Meaning on Achievement in First Grade Reading: Project 2699; Robert B. Ruddell, Director; University of California, Berkeley, California.

The primary objective of this study was to investigate the effect on word recognition and reading comprehension of published and specially prepared reading programs varying in (a) the degree of regularity of grapheme-phoneme correspondences programmed into the vocabulary presented and (b) the emphasis on language structure as related to meaning.

Pupils in twenty-four classrooms took part in the study of four reading programs: (1) a program which used a basal reading series with little provision for emphasis on language structure as related to meaning; (2) a program which used a set of programmed reading materials with vocabulary utilizing consistent grapheme-phoneme correspondences to a high degree but placing little emphasis on language structure as related to meaning; (3) a program which used a basal reading series (same as 1 above) supplemented by materials designed to build an awareness and understanding of language structure as related to meaning; and (4) a program which used a set of programmed reading materials (same as 2 above) supplemented by materials designed to build an awareness and understanding of language structure as related to meaning.

A secondary consideration of the investigation involved the study of the relation of selected language and background variables to reading achievement in each of the four programs.

Comparison of Reading Achievement of First Grade Children Taught by a Linguistic Approach and a Basal Reader Approach: Project 2666; J. Wesley Schneyer, Director; University of Pennsylvania, Philadelphia, Pennsylvania.

This study compared the reading achievement of first grade children taught by the Fries linguistic approach with that of children taught by a basal reader approach. Each group consisted of twelve classes: four of above average, four of average, and four of below average intelligence levels.

The two methods differ in the amount of emphasis given to word discrimination and word meaning. The linguistic approach places emphasis upon the word discrimination principle, which is based upon a mastery of sound-symbol relationships of spoken language as expressed in spelling patterns. The objective of this approach is to develop an automatic response and a rapid recognition on the part of the reader to the words in various major spelling patterns. Irregular or non-patterned words are learned as sight words.

The basal reader places heavy initial emphasis upon meaning. Attention is focused upon regularity of the meaning-frequency-repetition principle, rather than upon regularity of the sound-symbol relationship.

Effect of First Grade Instruction Using Basal Readers, Modified Linguistic Materials and Linguistic Readers: Project 2683; William D. Sheldon, Director; Syracuse University, Syracuse, New York.

This project compared the reading achievements of children taught by three methods of instruction. Twenty-one classrooms were divided among the three methods.

One group used a basal reading program, concentrating on direct small group instruction on children's ability levels at a rate commensurate with their ability to learn. Another group used modified linguistic instruction consisting of materials published by the Singer Company. The series of books progresses in difficulty so that it is possible for teachers to group children for instruction.

The third group used the linguistic approach consisting of the Barnhart-Bloomfield Linguistic Readers. Within each classroom a library of 100 easy-to-read books was installed and children were given the opportunity to practice their reading skills using these materials for 30 minutes each day. The lowest third of each class was presented listening-viewing activities with equipment from a center consisting of a tape recorder, a record player, and a filmstrip projector.

Individualized Reading Versus a Basal Reader Program at First Grade Level in Rural Communities: Project 2673; Doris U. Spencer, Director; Johnson State College, Johnson, Vermont.

The project compared the effectiveness of an individualized reading method designed to meet the needs and challenge the abilities of first grade pupils with the basal reader method. Twenty-two teachers were selected on the basis of supervisors' ratings, interest in the project, education and experience to participate in the project. Twelve elected to teach by the individualized plan and ten chose to follow the Scott Foresman Basal Reader program.

The individualized method used in this study was based on the premise that the reading program becomes more effective as individual needs are determined and instruction is concentrated at points of weakness. The instructional program was divided into two parts: an intensive systematic phonetic instruction and a motivated varied program of story reading. This method differs from the popular concept of individualized reading as a program of self-selected story reading unsupported by systematic instruction on word skills and comprehension.

Effectiveness of a Language Arts and Basic Reader Approach to First Grade Reading: Project 2679; Russell G. Stauffer, Director; The University of Delaware, Newark, Delaware.

In this study, the effects of a language arts approach and a basic reader approach to teaching reading were compared.

The language arts approach utilized the children's oral language facility to develop an initial reading vocabulary and initial word attack skills, as well as group type reading instruction in basic readers and individualized reading instruction using trade books.

The basic reader approach utilized basic readers, skill books, and teachers' manuals designed to develop and maintain a reading vocabulary and word attack skills.

The sample was comprised of twenty first grade classrooms; ten used the language arts approach, and ten used the basic readers.

A Comparison of the Effectiveness of Three Different Basal Reading Systems on the Reading Achievement of First Grade Children: Project 2720; Harold J. Tanyzer, Director; Hofstra University, Hempstead, Long Island, New York.

This study compared the effectiveness of three basal reading systems: (1) a basal series with intensive emphasis upon phonics, (2) a basal reading program by Mazurkiewicz and Tanyzer utilizing the Initial Teaching Alphabet, and (3) a regular basal reading series which utilizes an eclectic approach. The study included twenty-six classrooms from three school districts on Long Island, New York. The children were divided not only by sex, but also in terms of intelligence to determine whether any of the basal systems have a differential effect; prove more successful with males than females; or more successful with children of high, average, or low intelligence.

Chapter IV

PROCEDURES

This chapter describes the role of the Coordinating Center in the Cooperative Research Program, the decisions of the project directors concerning data collection and experimental procedures, the organization of the data, and the general procedures of the analysis.

Role of the Coordinating Center

The Coordinating Center was established primarily to perform two functions. First, the center was charged with the responsibility for maintaining communication among the various projects and for facilitating thereby the cooperative aspects of the study. The Coordinating Center staff organized one meeting of the participating project directors prior to the beginning of the first grade phase of the study, two meetings during the first grade phase of the study, and another meeting during the second grade phase of the study. At these meetings, the directors decided upon common measures to be used by all projects. They also agreed to collect information common to all studies about teacher, pupil, school, and community characteristics which might reasonably be expected to be related to success or failure in beginning reading. During these conferences the directors also discussed common experimental guidelines to be followed, common problems in collecting data, and other common problems which would have to be solved in order to make comparisons possible from project to project.

Uniformity in procedures was further enhanced through periodic memoranda issued by the Coordinating Center. Common formats for recording data on cards were devised for use during both the first grade and the second grade. Utilization of a common format by each project director made possible relatively easy organization of the data by the Coordinating Center. The Coordinating Center also served as a clearing house for questions about administration and scoring of various tests. In addition, all but five of the projects were visited by the project director or associate director of the Center during the first grade phase of the study. These visits further facilitated communication among the projects.

The second major function of the Coordinating Center was to collect, organize, analyze and interpret the data common to each child in all twenty-seven first grade projects and fifteen second grade projects. This analysis function of the center is the basis for this report and the one which was written following the first grade phase of the study. Analysis of the data at the Coordinating Center made possible an examination of treatment effects across projects. Each individual project director, of course, evaluated the effectiveness of the treatments used in his individual project. Results of the analysis conducted by each project are available in the final reports of the projects.

Sample

A sample of entering first grade children was selected by the director of each of the twenty-seven projects which participated in the first grade phase of the study. Pupils on whom complete data were gathered for both the first and the second grade comprised the sample for the analysis conducted by the Coordinating Center. The actual numbers of pupils involved in each treatment within each project are recorded in the description of the findings in Chapter VI. Details concerning criteria utilized by the Coordinating Center in selecting pupils whose data would be used in the analysis are presented in the section of this chapter devoted to "organization of the data."

Data Collected

During the first and second grade phases of the study a great deal of information was collected about each pupil, teacher, class, school, and community which participated in the study. School and community data were reported in the appendix of the first grade study and are not discussed further in this report. Characteristics of teachers who participated in the first grade phase of the study are also presented in the report of the first grade analysis. During the first grade phase of the study none of the teacher characteristics were found to be very highly related to pupil achievement in reading and therefore they were not analyzed in this study.

First Grade Measures

Various measures of reading readiness were collected for each pupil at the beginning of first grade. Each child in the study was administered (1) the Pintner-Cunningham Primary Test, a group test of intelligence; (2) the Murphy-Durrell Phonemes Test, a test of the ability to discriminate like and unlike sounds; (3) the Murphy-Durrell Letter Names Test, a test of the child's ability to recognize lower case and capital letters; (4) the Murphy-Durrell Learning Rate Test, a test of the child's ability to learn a small number of words; (5) the Thurstone-Jeffrey Identical Forms Test, a test of the child's ability to select from a group of figures a figure similar to the one used as the stimulus; (6) the Metropolitan Word Meaning Test, a test of vocabulary, (7) the Metropolitan Listening Test, a test of the child's ability to follow directions. All of the children utilized in the analysis of the first grade data and the second grade data had complete data on each of these seven premeasures.

Achievement at the end of the first grade was measured by means of the Stanford Achievement Test, Primary Battery I. Five subtests were used to measure the child's reading and general language ability. These subtests were: (1) the Word Reading Test, consisting of thirty-five items, which measures the ability of pupils to identify a word without the aid of context; (2) the Paragraph Meaning Test, which is a measure of the child's ability to comprehend connected discourse ranging in length from single sentences to paragraphs of six sentences, and which involves levels of comprehension varying from extremely simple recognition to the making of inference from several related sentences; (3) the Vocabulary Test, which measures a pupil's vocabulary independent of his reading skill; (4) the Spelling Test, which is a dictation type exercise; and (5) the Word Study Skills Test which tests auditory perception and phonics ability.

In addition to the group-administered Stanford Test of silent reading ability, a sample of twenty to fifty pupils from each treatment group within each project at the end of the first grade was administered the Gilmore Oral Reading Test. The Gilmore Test was scored in terms of reading accuracy and reading rate. The same sample pupils were asked to pronounce words from the Gates Word Pronunciation Test and the Fry Phonetically Regular Words Test. The Gates test consisted of the first two columns from the Gates-McKillop Diagnostic Reading Test. These words are listed according to increasing difficulty, but there is no attempt to control sound-symbol regularity in the gradation of the words. The Fry test is a list of words controlled on the basis of sound-symbol relationships and graded roughly in order of difficulty by vowel sounds used--short vowel words, long vowel words, broad a, vowel modified by r, and the like. In each of these word lists the child reads aloud and pronunces the word without the benefit of context.

Second Grade Measures

Achievement at the end of the second grade was measured by means of the Stanford Achievement Test, Primary Battery II, Form W. Five subtests from this battery were used in the general analysis to measure reading and general language ability. These subtests were: (1) the Word Meaning Test, also called Word Reading and Word Recognition test in this report, a measure of the child's ability to read a sentence and to select the correct word to complete the sentence; (2) the Paragraph Meaning Test, a test of the child's ability to comprehend a paragraph by selecting from four choices the proper word to fill a blank which has been used to indicate an omitted word; (3) the Spelling Test, a test of the child's ability to write a word from dictation; (4) Word Study Skills Test, a test of auditory perception and visual phonics; and (5) the Language Test, a test of usage, capitalization, and punctuation. The Primary II Battery of the Stanford Achievement Test also has tests of Science and Social Science Concepts, Arithmetic Computation and Arithmetic Concepts which were administered in most projects. Although data for these tests were not analyzed, pupil achievement on the tests for each treatment within each project is reported in the tables of descriptive data located in the appendix.

The Gilmore Oral Reading Test, the Fry Test of Phonetically Regular Words, and the Gates Word List were again administered to a sample from each treatment group in each project at the end of the second grade. These tests were identical to those administered at the end of the first grade.

In the analysis of methodology described in Chapter VI, treatment differences were evaluated for significance on both the first grade and second grade achievement measures. The emphasis in this report is on the second grade measures. However, the first grade data are reported to indicate first grade achievement of those pupils who constituted the sample for the second grade phase of the study. This permits a comparison of the effectiveness of various methods after one year and two years of instruction. It must be emphasized, however, that findings regarding first-grade achievement of the second-grade sample may not be in complete agreement with the findings regarding first-grade achievement of the total first-grade sample reported in the final report of the first-grade project. The second-grade sample is considerably smaller as a result of attrition and may not be completely representative of the original sample.

Organization of the Data

The data used in the analysis conducted by the Coordinating Center were provided by the project directors who participated in the second grade phase of the Cooperative Research Program in First Grade Reading Instruction. From the twenty-seven projects which comprised the first grade phase of the study, thirteen were funded to collect data during the second grade. Although data were collected from all thirteen participating projects in the second grade phase of the study, five projects were eliminated from the coordinated analysis. One of the five projects was eliminated because data cards were not punched in accordance with the format established by the Center. As a result, it was impossible to collate the second grade data with the first grade data. The other four projects were eliminated because they used atypical populations and/or they utilized unique treatments which were not replicated in any other project.

In addition to the eight participating projects which were funded by the U.S. Office of Education, two projects which had participated in the first grade phase of the study but were not funded for a second year also conducted follow-up studies using funds obtained from other sources and made their data available to the project. Therefore the analysis discussed in this report utilized the data from ten project centers in all. A short description of each of the ten projects is provided in Chapter III.

The organization of the data proceeded in the following fashion. Duplicate cards punched according to a prescribed format were sent to the Coordinating Center by each of the project directors. One card was used to record data common to all participating pupils in all projects. Another card was used to record data obtained only on the small sample taken from each treatment within each project. This card recorded the performances of the small sample on individual measures of oral reading capability and word recognition skills.

The card which recorded data common to all pupils in all projects had a prearranged format for reporting:

1. the identification number of the project
2. school and classroom identification numbers
3. pupil identification number
4. sex
5. Pintner-Cunningham raw score
6. sex of teacher
7. teacher's age in years
8. highest degree held by teacher
9. type of teaching certificate held by teacher
10. total number of years of teaching experience
11. number of years of second grade teaching experience
12. marital status of teacher
13. length of school day
14. length of school year
15. type of library facilities available
16. class size
17. pupil attendance
18. teacher attendance
19. San Diego Pupil Attitude Inventory
20. various subtests from the Stanford Achievement Test, Primary II Battery
21. extent of pupils independent reading
22. teacher rating of pupil interest in reading
23. average minutes per week of instructional time in reading
24. experimental variable identification code
25. card identification

The first step in the organization of data was to collate the second grade scores with the information about pupils collected during the first grade phase of the study. The card containing second grade data for each child was compared with that child's first grade data to check for similarity in pupil identification code, treatment code, and Pintner-Cunningham raw score. The Pintner-Cunningham score was punched on both the first grade data card and the second grade data card and was used as a double check to insure that each pupil's first grade and second grade were matched appropriately.

The data which were collated in the manner described were then analyzed to obtain descriptive data. Means and standard deviations were computed for each variable for each sex using individual pupils as the experimental unit. The pupils who entered into this phase of the analysis may or may not have been used in the main analysis to be described later. Larger numbers of pupils were involved in this analysis in most cases because cards were not screened at this point for missing data. The descriptive statistics are recorded in the appendix. Means and standard deviations are reported for most of the variables on which information was collected even though many of these variables were not utilized in the main analysis. Reference to these tables yield information about pupil achievement on the Stanford subtests titled Science and Social Science Concepts, Arithmetic Computation, and Arithmetic Concepts, none of which were utilized in the analysis of methodology described in a later section. The tables also report information about the extent of pupils' outside reading and his attitude toward reading. Information on these variables was not collected on every pupil in every study and the investigator did not want to lose pupils who had all of the reading-related Stanford Achievement measures but had failed to report information on some of these variables.

The next step was to check for missing data the cards for pupils who had met the collating criterion. Those pupils with common identification codes, Pintner-Cunningham scores, and treatment codes were checked to make sure that they had information punched in the slots assigned to (1) the Stanford measures for grade one; (2) Stanford Word Meaning, Stanford Paragraph Meaning, Stanford Spelling, Stanford Word Study Skills, and Stanford Language for grade two; and (3) prereading data concerning the Murphy-Durrell Phonemes, Murphy-Durrell Letter Names, Murphy-Durrell Learning Rate, Thurstone Identical Forms, Metropolitan Meaning, Metropolitan Listening, and Pintner-Cunningham Primary Test. Data were also checked to insure that a sex code was indicated. The pupils on whom complete data on these variables were found constituted the sample for the analysis reported in this study. No estimating of missing data was done.

After completion of the check for missing data, means were computed separately for boys and girls within each classroom. The class code for the first grade phase of the study was used as the classroom designation. These means were calculated separately for boys and girls who had been enrolled in the same classroom during the first grade, without regard to whether or not they were together in the second grade. An arbitrary decision was necessary since pupils who were together in a classroom during the first grade may or may not have been placed in the same classroom in the second grade.

A decision was also made to eliminate from the study class means based on fewer than five individuals. Therefore, if a mean was based on four or fewer boys or girls within any classroom designation, this mean was thrown out. It was felt that a mean based on just a few individuals might well be unrepresentative and might have undue influence on the analysis. In the analysis described in Chapter VI a mean based on one or two individuals would carry the same weight as a mean calculated for ten or twenty individuals. Information about the number of pupils and classrooms eliminated because of failure to meet this criterion is provided in the appendix. The same tables in the appendix report the number of boys and girls on whom each class mean used in the analysis is based.

Common Experimental Guidelines

In addition to administering common pre-instructional and post-instructional tests and collecting common information about teachers, school and communities, the project directors also agreed to abide by certain experimental guidelines. These were necessary, of course, to make possible comparisons between studies. The following procedural controls were considered essential during the first grade: (1) All testing instruments to be utilized in the collection of the data should not be in the hands of the classroom teacher until the close of the school day preceding the day the test was to be given. (2) Tests were not to be scored by the classroom teacher although she could administer the tests if the building principal or other professional person acted as an observer. (3) No instructions were to be given to the classroom teacher in test procedures beyond those which were provided in the manual for a given test. (4) The length of the experimental program was designated to be 140 instructional days. Pre-tests and post-tests were to be given before and after this 140 day period. Final testing would begin on the 141st day regardless of the time of year. (5) Each project director was encouraged to take whatever steps would be necessary to control for "Hawthorne effect" which would probably be associated with novel experimental programs.

Similar guidelines regarding test administration were instituted in the second grade. Achievement testing at the end of the second grade began in each project on May 16th and was completed within a weeks time. In each case group tests were administered before individual tests. Project directors also reported the number of days from the first day of school until testing began.

General Procedures of the Analysis

The second grade phase of the Cooperative Research Program in Primary Reading Instruction was designed to obtain information relevant to basic questions: (1) To what extent are various pupil characteristics related to pupil achievement in reading, spelling, and language skills at the end of the second grade? (2) How do I.T.A., Linguistic, Language Experience, and Phonic/Linguistic programs compare in effectiveness with Basal programs at the end of the second grade? (3) What is the relative influence on second grade achievement of the project in which a pupil learns to read and the method and/or materials which comprise the instructional program?

In order to assess relationships between pupil characteristics and achievement in reading, product moment correlation coefficients were computed. These correlation coefficients were computed separately for each of the treatments identified as Basal, I.T.A., Linguistic, Phonic/Linguistic, and Language Experience. Each of the correlations was calculated by pooling within sex and within class for relevant projects. Information about the numbers of pupils involved and the results of this analysis are reported in Chapter V.

The analysis of method is discussed in Chapter VI. The effectiveness of various innovative reading programs was evaluated by comparing pupil achievement with that of pupils enrolled in Basal programs in the same project. A major statistical device utilized was the analysis of covariance. Procedures are discussed in Chapter VI along with a presentation of the results.

An analysis was also conducted whereby each treatment within each project was compared with each of the other treatments in all of the other projects. This analysis was designed to obtain information pertinent to question three above. In this section of the analysis, presented in Chapter VII, each Basal treatment was considered a separate treatment. Likewise, each I.T.A. treatment, each Language Experience treatment, each Linguistic treatment, and each Phonic/Linguistic treatment was considered a separate treatment. Pupil differences in readiness among the various treatments and projects were adjusted by means of covariance. This analysis was designed to evaluate the relative influence of the instructional programs and the school system in determining the reading ability of second grade pupils. If an instructional program, such as the Language Experience approach, for example, produced relatively high achievement in reading regardless of the project in which a pupil was enrolled, this would tend to point out the importance of instructional method. If, on the other hand, all methods within a particular project tended to produce achievement at approximately the same rate this would tend to point up the influence of project or school system. A description of this analysis is presented in Chapter VII.

Chapter V

ANALYSIS OF RELATIONSHIPS

This chapter discusses the relationships between performance on reading readiness tests administered at the beginning of first grade and achievement at the end of second grade in reading, spelling and language. Relationships between first grade and second grade reading and spelling were also assessed. All relationships are reported as Pearson product-moment correlation coefficients.

Relationships between Readiness and Second Grade Achievement

The readiness measures used at the beginning of first grade were as follows:

1. Murphy-Durrell Phonemes (Ph)
2. Murphy-Durrell Letter Names (LN)
3. Murphy-Durrell Learning Rate (LR)
4. Thurstone-Jeffrey Identical Forms (IdF)
5. Metropolitan Word Meaning (MWM)
6. Metropolitan Listening (ML)
7. Pintner-Cunningham Primary Intelligence Test (IQ)

The achievement measures utilized at the end of the second grade were the subtests from the Stanford Achievement Test, Primary Battery II. These tests were

1. Word Meaning (WR2)
2. Paragraph Meaning (PM2)
3. Spelling (S2)
4. Word Study Skills (WSS2)
5. Language (Lang2)

The other variables listed on the tables which follow are achievement scores at the end of the first grade. Achievement at the end of the first grade was measured by the Stanford Achievement Test, Primary Battery I which included the following subtests:

1. Word Reading (WR1)
2. Paragraph Meaning (PM1)
3. Vocabulary (V1)
4. Spelling (S1)
5. Word Study Skills (WSS1)

Correlations among the various scores were computed separately for each of the five treatment categories used in the analysis. Each correlation was calculated by pooling within sex, within class, and within project. The correlation coefficients are, therefore, somewhat deflated from what they would be if correlations had been run ignoring sex, classroom, and project.

Correlation Relationships for Basal Treatment. The correlation matrix for the Basal treatment is presented in Table 5:01. The best predictor of second grade word recognition among the readiness measures was the letter names test which measures the child's ability to recognize letters of the alphabet. This test correlated .44 with the criterion. The phonemes subtest correlated .42 with second grade word recognition and was the second best predictor. Negligible correlations were found between the other readiness measures and second grade word recognition.

These same two tests, letter names and phonemes tests, were the best predictors of second grade achievement in paragraph comprehension. Correlations with the paragraph meaning subtest were .47 and .42 for the letter names and phonemes subtests respectively. The Pintner-Cunningham Intelligence Test correlated .40 with paragraph meaning. The letter names and phonemes tests also ranked first and second in their ability to predict spelling achievement at the end of second grade with correlations of .43 and .35 respectively. They ranked in the same order as the best predictors of language achievement at the end of the second grade. The phonemes test was the best predictor of achievement on the word study skills subtest with letter names ranking second. These correlations also were approximately .40.

The findings of the correlations between readiness and reading for the second grade were very much like those found at the end of the first grade. At that time, the ability to recognize letters of the alphabet and the ability to discriminate between like and unlike sounds were also the best predictors of achievement in the various reading and spelling measures. The correlations at the end of grade one were slightly higher than those obtained after grade two.

Correlation Relationships for I.T.A. Treatment. The correlation matrix for the I.T.A. treatment is presented in Table 5:02. The best predictor of performance on the word meaning subtest of the Stanford test at the end of the second grade was the letter names subtest which correlated .52. The Pintner-Cunningham Intelligence Test and the phonemes test were also highly related to ability to recognize words, as evidenced by correlation coefficients of .50 and .49.

The intelligence test administered at the beginning of first grade was the best predictor of reading comprehension at the end of the second grade. The correlation between the Pintner-Cunningham Primary Test and the paragraph meaning subtest was .55. The second best predictor of reading comprehension was the letter names test (.53), while the phonemes test (.46) was also relatively highly related.

Table 5:01

Correlation Matrix for Basal Treatment

Variate	Ph	LN	LR	IdF	MWM	ML	IQ	WR1	WR2	PM1	PM2	V1	S1	S2	WSS1	WSS2	Lang2
Ph		.44	.37	.25	.35	.29	.43	.46	.42	.44	.42	.44	.29	.35	.44	.47	.37
LN	.44		.44	.23	.32	.22	.36	.56	.44	.55	.47	.36	.44	.43	.48	.42	.38
LR	.37	.44		.22	.22	.18	.33	.36	.29	.38	.31	.26	.25	.28	.32	.30	.27
IdF	.25	.23	.22		.27	.21	.45	.24	.19	.24	.27	.30	.19	.20	.23	.26	.23
MWM	.35	.32	.22	.27		.38	.39	.33	.32	.31	.36	.45	.22	.23	.30	.28	.31
ML	.29	.22	.18	.21	.38		.38	.20	.23	.23	.27	.32	.11	.14	.23	.22	.24
IQ	.43	.36	.33	.45	.39	.38		.37	.34	.38	.40	.49	.26	.26	.36	.38	.31
WR1	.46	.56	.36	.24	.33	.20	.37		.61	.75	.64	.46	.55	.66	.66	.59	.54
WR2	.42	.44	.29	.19	.32	.23	.34	.61		.63	.75	.53	.46	.63	.54	.61	.58
PM1	.44	.55	.38	.24	.31	.23	.38	.75	.63		.69	.48	.54	.63	.65	.56	.58
PM2	.42	.47	.31	.27	.36	.27	.40	.64	.75	.69		.53	.50	.69	.58	.65	.64
V1	.44	.36	.26	.30	.45	.32	.49	.46	.53	.48	.53		.31	.38	.48	.43	.40
S1	.29	.44	.25	.19	.22	.11	.26	.55	.46	.54	.50	.31		.54	.50	.48	.41
S2	.35	.43	.28	.20	.23	.14	.26	.66	.63	.63	.69	.38	.54		.58	.65	.58
WSS1	.44	.48	.32	.23	.30	.23	.36	.66	.54	.65	.58	.48	.50	.58		.59	.54
WSS2	.47	.42	.30	.26	.28	.22	.38	.59	.61	.56	.65	.43	.48	.65	.59		.61
Lang2	.37	.38	.27	.23	.31	.25	.31	.54	.58	.58	.64	.40	.41	.58	.54	.61	
Means	25.0	34.5	10.1	10.9	9.0	9.3	38.5	20.9	19.2	21.1	32.0	22.5	13.0	14.5	38.2	38.8	38.9
St. D.	11.4	11.5	3.5	6.1	2.5	2.4	7.1	5.7	6.1	7.1	9.7	5.5	5.1	6.6	8.1	10.1	8.8

NOTE: Correlations were calculated by pooling within class and sex for those treatments labeled Basal. Means and pooled estimates of the standard deviations are presented at the base of the table. The N upon which this table is based is 1523 pupils from 89 classes in 10 projects.

Table 5:02

Correlation Matrix for I.T.A. Treatment

Variate	Ph	LN	LR	IdF	MWM	ML	IQ	WR1	WR2	PM1	PM2	V1	S1	S2	WSS1	WSS2	Lang2
Ph		.56	.39	.21	.32	.30	.46	.50	.49	.51	.46	.49	.34	.40	.48	.52	.46
LN	.56		.39	.21	.32	.25	.44	.56	.52	.56	.53	.46	.48	.49	.56	.52	.46
LR	.39	.39		.23	.24	.27	.32	.32	.29	.33	.34	.30	.28	.28	.27	.28	.29
IdF	.21	.21	.23		.24	.25	.39	.31	.30	.29	.33	.31	.18	.23	.28	.30	.30
MWM	.32	.32	.24	.24		.38	.42	.36	.42	.33	.39	.48	.22	.22	.36	.34	.37
ML	.30	.25	.27	.25	.38		.37	.32	.33	.27	.34	.42	.24	.22	.30	.28	.30
IQ	.46	.44	.32	.39	.42	.37		.49	.50	.49	.55	.56	.33	.35	.49	.50	.47
WR1	.50	.56	.32	.31	.36	.32	.49		.74	.82	.73	.59	.58	.70	.76	.68	.64
WR2	.59	.52	.29	.30	.42	.33	.50	.74		.73	.81	.62	.53	.73	.68	.71	.66
PM1	.51	.56	.33	.29	.33	.27	.49	.82	.73		.72	.58	.54	.69	.73	.67	.65
PM2	.46	.53	.34	.33	.39	.34	.55	.73	.81	.72		.62	.51	.71	.67	.69	.69
V1	.49	.46	.30	.31	.48	.42	.56	.59	.62	.58	.62		.36	.45	.59	.55	.54
S1	.34	.48	.28	.18	.22	.24	.33	.58	.53	.54	.51	.36		.53	.62	.45	.45
S2	.40	.49	.28	.23	.22	.22	.35	.70	.73	.69	.71	.45	.53		.67	.69	.58
WSS1	.48	.56	.27	.28	.36	.30	.49	.76	.68	.73	.67	.59	.62	.67		.71	.60
WSS2	.52	.52	.28	.30	.33	.28	.50	.68	.71	.67	.69	.55	.45	.69	.71		.62
Lang2	.46	.46	.29	.30	.37	.30	.47	.64	.66	.65	.69	.54	.45	.58	.60	.62	
Means	29.6	33.0	9.6	15.8	9.4	9.3	39.9	24.2	21.2	22.1	33.3	22.5	11.3	17.6	40.0	43.1	39.9
St. D.	10.9	12.2	3.7	6.2	2.5	2.5	7.4	6.6	6.1	9.3	10.8	5.8	5.2	7.1	8.6	11.3	9.3

NOTE: Correlations were calculated by pooling within class and sex for those treatments labeled I.T.A. Means and pooled estimates of the standard deviations are presented at the base of the table. The N upon which this table is based is 735 pupils from 44 classes in 5 projects.

The readiness measure most highly related to spelling ability at the end of the second grade was the letter names subtest. Measures of intelligence, auditory discrimination, and letter knowledge were approximately equal in effectiveness in predicting performance on the word study skills and language tests of the Stanford at the end of the second grade. All of these correlations approximated .50.

The correlations for the I.T.A. treatment were, in general, somewhat higher than those found for the Basal treatment. However, the same readiness measures were found to be the best predictors of the various second grade achievement measures. Furthermore, correlations for the I.T.A. treatment were very similar for grades one and two.

Correlation Relationships for the Language Experience Treatment. The correlation matrix for the Language Experience treatment is presented in Table 5:03. Again the letter names subtest was most highly related with achievement in word recognition at the end of first grade. Ability to recognize letters at the beginning of first grade was also found to be the best predictor of reading comprehension and spelling at the end of the second grade. Correlations with these three measures ranged from .46 to .48. Intelligence was found to be the best predictor of performance on the word study skills and language subtests, although both the phonemes and letter names tests were related to achievement on these measures to practically the same degree. These correlations are quite similar to those found for the Basal and I.T.A. treatments. Correlations for grades one and two are very similar.

Correlation Relationships for the Linguistic Treatment. The correlation matrix for the Linguistic treatment is presented in Table 5:04. The best predictor of word recognition achievement at the end of second grade was the phonemes subtest which correlated .43 with the criterion. The letter names subtest correlated .41 with second grade word recognition. These same subtests were similarly related with performance on the paragraph meaning subtest but their positions were reversed. The letter names subtest correlated .49 with spelling achievement after two years of instruction while the phonemes correlated .38 with the same test. The phonemes subtest and letter names subtest ranked first and second in their ability to predict performance on the word study skills test, the correlation being .51 and .39 respectively. These same two tests were the best predictors of performance on the language test. The correlations found on the Linguistic treatment are very similar to those found for the other treatment groupings, except that the Pintner-Cunningham Primary Test was related to second grade achievement to a somewhat lesser degree.

Correlation Relationships for the Phonic/Linguistic Treatment. The correlation matrix for the Phonic/Linguistic treatment is presented in Table 5:05. Intelligence was the best predictor of second grade achievement on the word recognition subtest (.49), with the phonemes

Table 5:03

Correlation Matrix for Language Experience Treatment

Variate	Ph	LN	LR	IdF	MWM	ML	IQ	WR1	WR2	PM1	PM2	V1	S1	S2	WSS1	WSS2	Lang2
Ph		.45	.39	.22	.27	.25	.39	.37	.38	.39	.40	.42	.34	.33	.38	.45	.35
LN	.45		.35	.27	.26	.18	.35	.45	.46	.50	.48	.37	.45	.47	.44	.43	.36
LR	.39	.35		.22	.16	.13	.28	.27	.23	.30	.29	.21	.26	.30	.26	.23	.26
IdF	.22	.27	.22		.15	.17	.40	.25	.26	.25	.31	.27	.23	.24	.29	.28	.28
MWM	.27	.26	.16	.15		.35	.32	.22	.26	.25	.30	.44	.16	.14	.26	.22	.24
ML	.25	.18	.13	.17	.35		.31	.18	.20	.19	.23	.31	.19	.11	.22	.22	.18
IQ	.39	.35	.28	.40	.32	.31		.34	.38	.47	.46	.50	.32	.29	.41	.46	.38
WR1	.37	.45	.27	.25	.22	.18	.34		.52	.64	.54	.34	.57	.52	.67	.48	.40
WR2	.38	.46	.23	.26	.26	.20	.38	.52		.64	.75	.40	.57	.69	.57	.65	.62
PM1	.39	.50	.30	.25	.25	.19	.47	.64	.64		.68	.46	.65	.60	.65	.58	.51
PM2	.40	.48	.29	.31	.30	.23	.46	.54	.75	.68		.48	.59	.63	.62	.63	.63
V1	.42	.37	.21	.27	.44	.31	.50	.34	.40	.46	.48		.32	.32	.39	.40	.37
S1	.34	.45	.26	.23	.16	.19	.32	.57	.57	.65	.59	.32		.61	.67	.54	.44
S2	.33	.47	.30	.24	.14	.11	.29	.52	.69	.60	.63	.32	.61		.54	.58	.50
WSS1	.38	.44	.26	.29	.26	.22	.41	.67	.57	.65	.62	.39	.67	.54		.62	.48
WSS2	.45	.43	.23	.28	.22	.22	.46	.48	.65	.58	.63	.40	.54	.58	.62		.57
Lang2	.35	.36	.26	.28	.24	.18	.38	.40	.62	.51	.63	.37	.44	.50	.48	.57	
Means	24.0	33.8	9.1	16.0	9.0	9.2	38.3	23.7	20.4	24.1	33.6	23.0	14.4	16.7	40.1	40.2	40.6
St. D.	11.4	11.1	3.5	6.3	2.3	2.3	6.5	6.2	5.8	7.2	9.2	4.9	3.6	6.6	7.5	9.7	7.7

NOTE: Correlations were calculated by pooling within class and sex for those treatments labeled Language Experience. Means and pooled estimates of the standard deviations are presented at the base of the table. The N upon which this table is based is 552 pupils from 30 classes in 3 projects.

Table 5:04

Correlation Matrix for Linguistic Treatment

Variate	Ph	LN	LR	IdF	MWM	ML	IQ	WR1	WR2	PM1	PM2	V1	S1	S2	WSS1	WSS2	Lang2
Ph		.42	.33	.24	.34	.26	.42	.50	.43	.44	.43	.44	.43	.38	.53	.51	.36
LN	.42		.40	.13	.24	.18	.32	.53	.41	.52	.45	.34	.51	.49	.50	.39	.37
LR	.33	.40		.14	.15	.12	.31	.46	.33	.48	.34	.24	.40	.38	.40	.31	.34
IdF	.25	.13	.14		.13	.10	.46	.27	.18	.25	.21	.20	.21	.19	.18	.18	.14
MWM	.34	.24	.15	.13		.26	.30	.25	.25	.20	.27	.41	.15	.12	.25	.19	.22
ML	.26	.18	.12	.10	.26		.25	.18	.24	.21	.21	.31	.10	.12	.24	.19	.17
IQ	.42	.32	.31	.46	.30	.25		.44	.32	.44	.40	.42	.33	.28	.40	.40	.31
WR1	.50	.53	.46	.27	.25	.18	.44		.62	.75	.64	.48	.74	.68	.73	.57	.51
WR2	.43	.41	.33	.18	.25	.24	.32	.62		.61	.80	.45	.63	.69	.65	.57	.67
PM1	.44	.52	.48	.25	.20	.21	.44	.75	.61		.61	.41	.69	.65	.65	.55	.53
PM2	.43	.45	.34	.21	.27	.21	.40	.64	.80	.61		.44	.65	.71	.65	.58	.65
V1	.44	.34	.24	.20	.41	.31	.42	.48	.45	.41	.44		.37	.31	.49	.38	.38
S1	.43	.51	.40	.21	.15	.10	.33	.74	.63	.69	.65	.37		.75	.72	.59	.54
S2	.38	.49	.38	.19	.12	.12	.28	.68	.69	.65	.71	.31	.75		.67	.63	.60
WSS1	.53	.50	.40	.18	.25	.24	.40	.73	.65	.65	.65	.49	.72	.67		.63	.54
WSS2	.51	.39	.31	.18	.19	.20	.40	.57	.57	.55	.58	.38	.59	.63	.63		.54
Lang2	.36	.37	.34	.14	.22	.17	.31	.51	.67	.53	.65	.38	.54	.60	.54	.54	
Means	23.5	32.8	9.7	16.0	8.6	8.8	35.4	19.8	18.3	17.4	29.1	20.6	10.6	13.6	35.9	34.1	39.0
St. D.	11.0	10.6	3.7	7.4	2.5	2.2	7.8	5.8	6.1	7.3	9.8	5.2	4.5	6.2	7.3	9.3	8.2

NOTE: Correlations were calculated by pooling within class and sex for those treatments labeled Linguistic. Means and pooled estimates of the standard deviations are presented at the base of the table. The N upon which this table is based is 572 pupils from 30 classes in 3 projects.

Table 5:05

Correlation Matrix for Phonic/Linguistic Treatment

Variate	Ph	LN	LR	IdF	MWM	ML	IQ	WR1	WR2	PM1	PM2	V1	S1	S2	WSS1	WSS2	Lang2
Ph		.55	.60	.39	.44	.38	.60	.58	.48	.54	.52	.51	.52	.39	.61	.50	.47
LN	.55		.52	.34	.32	.30	.51	.52	.44	.52	.50	.42	.50	.43	.49	.47	.49
LR	.60	.52		.24	.27	.24	.43	.48	.35	.51	.41	.36	.51	.39	.50	.40	.36
IdF	.39	.34	.24		.36	.37	.58	.39	.24	.34	.39	.29	.34	.26	.37	.32	.36
MWM	.44	.32	.27	.36		.39	.49	.29	.35	.24	.34	.55	.21	.13	.33	.21	.30
ML	.38	.30	.24	.37	.39		.55	.35	.37	.36	.39	.38	.31	.21	.32	.31	.36
IQ	.60	.51	.43	.58	.49	.55		.55	.49	.50	.60	.50	.52	.43	.59	.56	.54
WR1	.58	.52	.48	.39	.29	.35	.55		.61	.76	.69	.48	.81	.66	.74	.60	.59
WR2	.48	.44	.35	.24	.35	.37	.49	.61		.66	.76	.60	.66	.60	.63	.58	.65
PM1	.54	.52	.51	.34	.24	.36	.50	.76	.66		.72	.48	.73	.58	.70	.56	.60
PM2	.52	.50	.41	.39	.34	.39	.60	.69	.76	.72		.57	.67	.64	.64	.61	.69
V1	.51	.42	.36	.29	.55	.38	.50	.48	.60	.48	.57		.53	.37	.57	.41	.46
S1	.52	.50	.51	.34	.21	.31	.52	.81	.66	.73	.67	.53		.64	.74	.55	.62
S2	.39	.43	.39	.26	.13	.21	.43	.66	.60	.58	.64	.37	.64		.54	.58	.60
WSS1	.61	.49	.50	.37	.33	.32	.59	.74	.63	.70	.64	.57	.74	.54		.60	.62
WSS2	.50	.47	.40	.32	.21	.31	.56	.60	.58	.56	.61	.41	.55	.58	.60		.64
Lang2	.47	.49	.36	.36	.30	.36	.54	.59	.65	.60	.69	.46	.62	.60	.62	.64	
Means	28.9	35.8	11.2	15.1	8.9	9.1	38.9	27.5	22.8	24.7	37.0	24.4	14.7	18.8	42.9	43.9	43.7
St. D.	11.5	10.9	4.0	5.5	2.6	.23	7.3	5.7	5.3	9.1	9.6	5.5	4.9	6.5	8.3	11.3	9.5

NOTE: Correlations were calculated by pooling within class and sex for those treatments labeled Phonic/Linguistic. Means and pooled estimates of the standard deviations are presented at the base of the table. The N upon which this table is based is 226 pupils from 13 classes in 2 projects.

and letter names subtests ranking second and third. These same three tests ranked first, second, and third in their relationship to achievement in paragraph comprehension at the end of the second grade. The relationship between intelligence and paragraph comprehension was .60, while the other correlations were .52 and .50. These tests were also the best predictors of achievement on the spelling, word study skills, and language subtests of the Stanford Achievement Test, Primary Battery II. Correlations between intelligence and these three achievement measures ranged from .43 to .56. The correlation coefficients for the Phonic/Linguistic treatment were unique in that intelligence as measured by the Pintner-Cunningham Primary Test, was more highly related to second grade reading achievement for this treatment than for the other treatments. For the other treatments, intelligence ranked behind measures of auditory discrimination and letter knowledge in predicting second grade achievement. However, in practical terms, for nearly all treatments intelligence, letter knowledge, and auditory discrimination were equally effective predictors. It is also interesting to note that the three best predictors are the three tests with the highest standard deviations. Perhaps these tests are related to achievement not because of the skills they measure but because of the variability in performance they obtain.

Relationships between First Grade and Second Grade Achievement.

The tables which present the correlation matrices for the various treatments also show the correlations between first grade and second grade achievement. The matrix for the Basal treatment will be used for discussion purposes. Table 5:01 reports correlations of .61 between word recognition ability at the end of the first grade and the same ability at the end of the second grade. Performance on the first grade test of word recognition is also correlated .64 with second grade paragraph comprehension, .66 with second grade spelling, .59 with second grade word study skills and .54 with second grade language. These correlations indicate that in general pupils who are skilled in recognizing words at the end of the first grade are likewise skilled in reading, spelling, and language achievement at the end of the second grade. However, the extent of the correlations (.66 and below) is such that second grade achievement in the various areas is related to considerably more than first grade word recognition ability. Much of the variability in second grade achievement is not accounted for by variability in performance on the first grade word recognition test.

First grade ability in reading comprehension is correlated .69 with second grade paragraph comprehension. The paragraph meaning subtest is also correlated .63 with second grade word recognition, .63 with second grade spelling, .56 with second grade word study skills, and .58 with language. Again these correlations are substantial enough to indicate that reading ability at the end of the first grade is highly related to reading, spelling, and language ability at the end of the second grade. However, again the correlation is not sufficiently high to account for all of the variability in second grade achievement scores. It is also interesting to note that first grade spelling ability is related only .54 with second grade spelling ability. Compared to the other correlations between first and second grade achievement this is relatively low. Word study skills for the two years are related .59 with each other.

The various correlation matrices indicate that first grade achievement is a much better predictor of second grade achievement than is performance on the readiness test administered at the beginning of first grade. Most of the correlations between first grade and second grade achievement are in the neighborhood of .60 to .70, while correlations between readiness and second grade achievement are approximately .45 to .55.

Summary

This chapter has presented correlation relationships between first grade reading readiness and second grade achievement and between first grade achievement and second grade achievement. The best pre-reading predictors of second grade achievement were readiness measures of letter knowledge, auditory discrimination, and intelligence. Correlations between these measures and the various measures of second grade achievement ranged from approximately .40 to .55. These same three readiness characteristics were found to be the best predictors of second grade achievement in each of the kinds of instructional programs used in this investigation. There was no indication that any readiness subtest was uniquely related to success in the various types of programs although intelligence was somewhat more highly related to success in the Phonic/Linguistic program than to achievement in the other programs. In general, results of this study would indicate that it is not feasible to place pupils differentially in instructional programs on the basis of a profile of readiness characteristics at the beginning of first grade.

Measures of reading achievement at the end of first grade were correlated to a high degree with measures of second grade reading achievement. Most of the correlations were above .60 which would indicate that in general good first grade readers become good second grade readers and spellers and poor first graders have difficulty in second grade reading and spelling. However, the correlations are low enough to suggest that it is possible for pupils who get a slow start in reading to accelerate their reading growth in the second grade.

Chapter VI

ANALYSIS OF INSTRUCTIONAL METHODS

This chapter discusses that part of the analysis which was concerned with evaluating the relative effectiveness of the primary reading programs utilized in the Cooperative Research Program. Because the various approaches were not all used in all projects, comparisons could not be made between and among all of them. Tremendous project differences in pupil readiness and in pupil achievement would have made comparisons between treatments found in different projects meaningless. However, projects which had in common a basal treatment and another treatment (Language Experience, for example) were grouped together. In this manner, the basal reader treatment was used as a benchmark against which to compare achievement in each of the less typical programs.

General Procedures

Data from ten projects were used in this section of the analysis. These particular ten projects were included because they utilized a sample which was considered to be representative of the total population and an experimental program which also was used in another investigation. The establishment of these two criteria eliminated atypical populations such as those comprised of potential disabled readers or Spanish-speaking youngsters as well as projects which included a treatment or program not replicated in any other project. If a treatment were used in only one project, the analysis conducted by the Coordinating Center could add little to the analysis performed by the specific project director.

In the second grade phase of the study five types of instructional materials or methods were used as experimental treatments in more than one project. These five groupings were labeled Basal, Initial Teaching Alphabet, Language Experience, Linguistic, and Phonic/Linguistic. A listing of the specific materials which comprised each of these major groupings will be presented in later sections of the Chapter. In addition, the criteria used to assign programs to each of these major categories will also be described. A sixth category labeled Basal plus Phonics was utilized in the first grade and was comprised of a basal reading program with supplementary phonics instruction. However, only one of the four projects which utilized this treatment in the first grade was continued into the second grade and therefore no analysis of second grade data was undertaken.

In order to assess the relative effectiveness of programs, five separate analyses were performed. Each analysis used the basal reader as the control against which to compare progress in other instructional programs. All of the projects which used as experimental treatments both the basal reader approach and the Language Experience approach, for example, were combined into a single analysis. Similarly projects were grouped together for analysis if they had in common programs labeled Basal and Initial Teaching Alphabet, Basal and Linguistic, and Basal and Phonic/Linguistic. For this section of the analysis, methods and materials were placed in categories arbitrarily on the basis of common characteristics. The purpose was to get some idea of whether or not there was a general superiority of some treatment over several different projects. The paragraphs which follow discuss major characteristics of each treatment.

One of the program groupings was labeled the Basal approach. The basal reading program, then, was considered an entity even though the programs of many different publishers were utilized. The various sets of materials included in this category possess most, if not all, of the following characteristics: (1) Vocabulary is introduced slowly and repeated often. Vocabulary control is based on frequency of usage rather than on regularity of sound-symbol relationships. (2) Phonic analysis is introduced gradually and usually only after some "sight" words have been taught. However, from the beginning the child is encouraged to use such other word recognition skills as context, structural analysis, and picture clues. (3) Emphasis from the beginning is placed not only on word recognition but on comprehension and interpretation of what is read. (4) Silent reading is emphasized early in the program. (5) The various reading skills are introduced and developed systematically. (6) A well-known basic reading series is used as the major instructional tool.

Another method category utilized in this phase of the analysis was labeled I.T.A. or the Initial Teaching Alphabet. This instructional medium purports to simplify the task of learning to read by introducing a novel forty-four character alphabet with which to encode the approximately forty sounds in the English language. In general, one symbol is used to represent one sound thereby making possible more consistent phonic analysis of words. Furthermore, the nature of the alphabet is such that the transition from the use of the Initial Teaching Alphabet to the use of traditional orthography is purported to be a relatively simple task. Two different programs comprised the I.T.A. approach but these two programs had in common the unique characteristic of a teaching medium which was quite different from that used by any of the other methods and materials.

A third treatment group was labeled Language Experience. A basic element of this instructional method is that the child's own writing serves as a medium of instruction. The child's first stories are dictated to the teacher who acts as the recorder. As soon as he is able, the pupils writes his own stories and shares them with the teacher. During the individual conferences between pupil and teacher he is helped to recognize the commonality between the words he writes and speaks and he develops the skills necessary for reading. This approach, then, ordinarily utilizes far fewer highly structured instructional materials than do most reading programs. In addition, vocabulary control is viewed as being in the language itself and in the language background of each child. The pupil learns to read the words which he finds it necessary for him to use in writing. One of the major instructional tasks in this method is to engender a stimulating language environment.

A fourth treatment category was labeled Linguistic. The various materials included in this treatment possess most, if not all, of the following characteristics: (1) There is an early introduction to letters, and knowledge of letter names and the ability to recognize letters are considered prerequisite skills for reading instruction. (2) Sound-symbol relationships are taught through careful sequencing of word patterns. Words with high sound-symbol regularity are taught first and the child is led to discover the sound-symbol relationships which exist. In many cases, the child is encouraged to use sound-symbol relationships as the basic word recognition technique by withholding from him such clues as pictures and word length. (3) In many cases there is less emphasis on understanding and comprehension in the early stages. Reading is considered a process of translating graphic symbols into sounds and primary attention is paid to helping the child learn the decoding system.

The only "pure" treatment was the Phonic/Linguistic program published by the Lippincott Company. This program was included as a separate method because it has in common characteristics of various programs but does not fit too well with any of them. The Phonic/Linguistic program controls vocabulary on the basis of sound-symbol correspondences and in this way it resembles somewhat the Linguistic grouping described above. However, the manner of introducing initial vocabulary is quite different. The Phonic/Linguistic program also introduces vocabulary rapidly as do certain of the Linguistic programs and the I.T.A. program. The visual aids which form a part of the program are somewhat unique and in this way the program is different. Because the Phonic/Linguistic program has characteristics which overlap with others and yet does not fit very well with any of the other groupings it was considered a separate category.

Certain problems arise in categorizing materials in the manner described. In the first place, an assumption must be made that all basal materials are so similar that they can reasonably be considered a single experimental treatment. Similar assumptions must be made about the comparability of Linguistic, Phonic/Linguistic, I.T.A., and Language Experience programs.

An additional problem presents itself in the second grade. Programs which utilize the Initial Teaching Alphabet are transitional programs and are not designed to be full-scale developmental programs of the nature typified by basal materials. Children use the Initial Teaching Alphabet only until they gain fluency in reading, usually late in the first grade or early in the second grade. Therefore, pupils in I.T.A. programs usually enter basal materials, language experience approaches, or individualized reading programs after making the transition to traditional orthography. The I.T.A. programs involved in the Cooperative Research Program utilized each of the post-transition instructional approaches listed. As a result, another element of variation was introduced into the instructional treatment labeled I.T.A. Programs carrying the I.T.A. label may have differed considerably during the second grade following the transition period.

A similar problem existed with the Linguistic category. Some of the materials in this category are also designed only for initial instruction, and pupils usually spend less than two years with the materials before moving into other types of instructional programs. As a result, testing achievement at the end of the second grade creates problems of interpretation. If a Linguistic program is found to be superior or inferior, the question remains as to whether the superiority or inferiority is a result of initial use of linguistic materials or of the instructional program into which pupils were placed after completing the linguistic program.

Analysis of the Data

The effectiveness of the various reading programs was evaluated in terms of pupil achievement at the end of second grade on the Word Meaning, Paragraph Meaning, Spelling, Word Study Skills, and Language subtests of the Stanford Achievement Test, Primary II Battery, Form W. In addition, a sample from each treatment within each project was administered the Gilmore Oral Reading Test, the Fry Phonetically Regular Word List, and the Gates Word Pronunciation Test.

Analysis of Stanford Achievement Test Scores

The analysis followed a general pattern for each of the four method comparisons (I.T.A. versus Basal, Language Experience versus Basal, Linguistic versus Basal, and Phonic/Linguistic versus Basal). Separate means were calculated for males and females within each class on all quantitative variables. The analysis was then conducted using these class means calculated separately for males and females as the experimental unit. An arbitrary decision was made to drop from the analysis any class mean for boys or girls which was based on fewer than five individuals. It was felt that class means based on fewer than five individuals might not be representative and might have undue influence on the results since in the analysis a class mean based on two individuals would carry the same weight as one based on ten. A listing of the number of individuals whose scores comprised each class mean for boys and girls is provided in the appendix. These same tables provide information about the number of pupils lost in each of the treatments within each of the projects because of failure to meet the criteria of five pupils of each sex within each class.

The first step in the analysis of method was to compare first grade achievement of those pupils in each treatment within each project who persisted in the study with similar pupils who participated in the first grade phase of the study but were lost during the second grade stage of the investigation. Mean achievement on the first grade Stanford measures was calculated for those pupils who were used in the first grade phase of the study but on whom complete data were not gathered during the second grade stage. Mean achievement on the first grade Stanford measures was also assessed for those pupils who persisted in the study and comprised the sample for the second grade. An analysis of variance was conducted to determine whether or not the persists and non-persists differed significantly in first grade reading and spelling. This stage of the analysis also made possible an examination of treatment (basal versus non-basal) by status (persists vs non-persists) interactions. A significant status by treatment interaction indicated that the relationship in achievement between the particular basal and non-basal treatment among the non-persists was different from the relationship between the achievement of basal and non-basal pupils within the persists category. This would indicate some selectivity in retention and would make difficult an interpretation of the second grade findings regarding treatment differences.

The analysis of Stanford Achievement Test scores utilized projects, treatments, and sex as blocks. This section of the analysis was conducted as if a complete factorial arrangement of treatments had been made. Projects were treated as blocks and the assumption was made that within each project treatments were assigned at random to a set of classes. It was assumed that identical basal and non-basal treatments were used in each project (within a specified comparison such as Language Experience versus Basal), thus making it reasonable to test for general treatment effect over all projects. This portion of the analysis gave "across projects" information.

For each of the four treatment comparisons an analysis of variance was carried out on seven premeasures--Murphy-Durrell Phonemes, Murphy-Durrell Letter Names, Murphy-Durrell Learning Rate, Thurstone-Jeffrey Identical Forms, Metropolitan Word Meaning, Metropolitan Listening, and Pintner-Cunningham Primary Test. The analysis of variance on these premeasures was designed to indicate those readiness characteristics on which significant differences in performance were found between pupils of a particular basal and non-basal treatment. This analysis was designed to test the hypothesis that the pupils in the basal and non-basal treatments were equally ready for reading in terms of the evaluation instruments utilized. Although school, community, and teacher characteristics were obtained in each of the projects, they were not utilized as controls in this section of the analysis. In the first grade phase of the analysis none of these were found to be highly related to pupil success in reading. Furthermore, many of these characteristics were not quantitative and in many cases no ordered relationship existed among the categories. At any rate, the decision was made not to evaluate treatment differences in terms of school, community, and teacher characteristics, nor to use any of these as covariates in a covariance analysis. However, information about these variables for each of the treatments within each of the projects can be found in the final report of the first grade phase of the study.

The Stanford Achievement measures were then subjected to an analysis of variance to test for treatment differences. This stage of the analysis was designed to determine whether or not statistically significant differences existed across all of the projects involved in a particular basal versus non-basal comparison. Treatment differences on measures of first-grade achievement as well as second grade achievement were evaluated. However, the discussion of findings focuses on second grade achievement. It should be pointed out that the findings comcerning first grade achievement might be somewhat different in this report from the findings presented in the final report of the first grade project which are summarized in Chapter II. The results in the present chapter are based on only those pupils who persisted through the second grade phase of the investigation. These findings could conceivably differ from findings based on the total first grade sample.

Since in the analysis described in this chapter treatment and project were treated as blocks, it was possible to check for significant treatment by project interactions. A significant interaction would indicate that any particular treatment was not operating in the same fashion across all of the projects. Any significant treatment differences would be meaningful only if no significant treatment by project interactions were found.

If significant treatment by project interactions on the Stanford Achievement measures were found in the analysis of variance, an analysis of covariance was utilized. This was also an across projects analysis blocking on sex, treatment, and project in which each of the seven premeasures were used as covariates. It was hoped that the use of the covariance analysis would erase the project by treatment interactions. Again, any analysis of treatment differences across projects would be meaningful only if no significant treatment by project interactions were found.

In situations where significant treatment by project interactions were still found to exist even after using the covariance analysis, a within projects analysis was conducted. This within projects analysis tested for treatment differences within each project but simultaneously for all projects. As a result, all data from all projects involved in a comparison were used to obtain the error term, thus increasing the precision of the experiment. This phase of the analysis indicated whether or not significant treatment differences existed between the particular basal and non-basal program within each of the projects involved in this section of the analysis. All of the analyses of variance and covariance were performed using the UMSTAT 67 program and the Control Data 1604 computer.

The analysis of treatment differences between each of the basal versus non-basal comparisons proceeded in the manner described above. First a comparison was made of the first-grade achievement of pupils who persisted in the study and those who were lost to the study during the second grade. Next, an analysis of variance was conducted on the premeasures to determine whether or not pupils in the two treatments were alike in their readiness for reading. Then an analysis of variance was conducted on the Stanford measures, blocking on treatment, sex, and project. Treatment differences were analyzed only if no significant treatment by project interactions were found to exist. In the presence of treatment by project interactions, a covariance analysis was conducted across projects in which each of the seven premeasures was used as a covariate. Again, treatment by project interactions were analyzed for significance. If significant interactions still persisted a within projects analysis was conducted, in which treatment differences were evaluated within each of the projects which participated in a particular basal versus non-basal comparison.

Analysis of Sample Measures

An analysis similar to the one described for the Stanford Achievement Test results was conducted on the accuracy and rate scores of the Gilmore Oral Reading Test, and the scores from the Fry Phonetically Regular Word Test and the Gates Word Pronunciation Test. Each of these tests was individually administered to a random sample from each treatment within each project. Although these numbers varied from project, approximately twenty to fifty pupils were chosen to represent each treatment in each project.

The analysis followed the same steps as those described for Stanford scores. The only difference was that individuals were used as the experimental unit rather than class means based on each sex. With the small numbers involved it was felt that these class means would not have been reasonable. In this chapter the discussion of the analysis of individual outcome measures will follow the discussion of the Stanford data for each of the treatment comparisons.

Basal versus I.T.A. Comparison

Some measure of the effectiveness of using the Initial Teaching Alphabet for initial reading instruction of children was obtained by comparing the achievement of pupils involved in I.T.A. programs with that of pupils involved in Basal programs within the same school systems. As in all of the basal versus non-basal comparisons, the basal reader was considered a single program regardless of the particular program utilized because of the common characteristics of materials labeled basal. Similarly, I.T.A. programs were considered an entity regardless of whether the materials were the Early-to-Read series or the Downing Readers. Furthermore, all I.T.A. programs were grouped together despite the fact that the nature of the instructional program in the second grade varied considerably from one project to another. Following the transition from I.T.A. to traditional orthography, pupils in some projects transfered into what might best be termed the Language Experience approach. Pupils in other projects, however, following completion of the Initial Teaching Alphabet series went into individualized reading programs or Basal programs. Information about the nature of the post-transition instruction for I.T.A. pupils is avaliable in the final reports of the various participating projects. Therefore, the comparison between pupils who learned to read in I.T.A. materials and Basal materials must be considered to evaluate only the general effectiveness of learning to read by means of a relatively consistent orthography such as that utilized in the Initial Teaching Alphabet. The assumption is made that any effect, positive or negative, resulting from initial instruction in the Initial Teaching Alphabet will carry over regardless of the nature of the program in which the child is enrolled following the transition from I.T.A. to traditional orthography.

Information about the nature of the materials used in the first grade phase of the study is provided in Table 6:01. The Basal treatment in these studies utilized the same basal programs in both the first and second grades. However, as has already been mentioned, I.T.A. programs went in many directions following the transition from I.T.A. to traditional orthography.

Table 6:01 also reports the number of individuals and the number of classes comprising the Basal and I.T.A. treatments within each of the five projects for both the first and second grades. In some cases whole classes of individuals were lost to the study. The projects also differed a great deal with respect to the number of pupils lost during the second grade phase of the study.

The first-grade achievement test scores for the pupils who persisted in the study were compared with the scores of those pupils who did not

Table 6:01

Materials and Numbers of Classes and Pupils for Basal vs I.T.A.

	Fry				Hahn				Hayes			
	Classes		Pupils		Classes		Pupils		Classes		Pupils	
	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade
Numbers												
Basal	6	6	96	84	12	10	283	182	5	3	86	48
I.T.A.	7	6	114	94	12	11	246	173	5	5	93	79
Materials												
Basal	Allyn-Bacon				Variety				Scott-Foresman			
I.T.A.	Early-to-Read				Downing Readers				Early-to-Read			

Table 6:01 (continued)

	Mazurkiewicz				Tanyzer			
	Classes		Pupils		Classes		Pupils	
	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade
Numbers								
Basal	17	15	288	204	9	9	219	167
I.T.A.	15	11	275	162	9	9	229	207
Materials								
Basal		Row-Peterson American Book				Scott-Foresman		
I.T.A.		Early-to-Read				Early-to-Read		

persist in order to gain some information about the comparability of the two groups. Non-persists or dropouts were defined as those pupils for whom complete data were gathered during the first grade phase of the study but who failed to complete all of the tests during the second grade. Persists were those pupils on whom complete data were gathered during both the first and second grade phases of the study. An analysis of variance was performed within projects to determine whether or not non-persists differed significantly from persists in achievement at the end of the first grade. The analysis also made possible a determination of whether or not significant treatment (I.T.A. versus Basal) by status (dropouts versus persists) interactions were found to exist in the various projects. Significant treatment by status interactions would indicate that the relationship between Basal and I.T.A. pupils among the persists was different from the relationship between Basal and I.T.A. pupils among the non-persists. In an extreme case a significant interaction might indicate that I.T.A. pupils were significantly better achievers than Basal pupils among the persists while just the reverse was true for the non-persists. Such information would be vital for interpreting the second grade phase of the study.

The analysis of variance for the first grade Stanford measures is reported in Table 6:02. In the first two projects no differences in first grade achievement were found between the non-persists and the persists. In the last three projects, however, many differences favoring the persists were found to be significant. However, only five significant treatment by status interactions were found among the five projects. This analysis indicates that those pupils who persisted in the study are somewhat superior in achievement to those pupils who dropped out after the first grade phase of the study. However, the relationship between the achievement of I.T.A. and Basal pupils among persists is generally similar to the relationship between I.T.A. and Basal pupils among the non-persists.

The various means for the persists and non-persists are presented in Table 6:03. The reasons for the five significant status by treatment interactions are evident. In Mazurkiewicz's project the Basal dropouts were far superior to the I.T.A. dropouts on the Vocabulary and Word Study Skills subtests, while among persists Basal pupils were only slightly superior. The three significant interactions in Tanyzer's project arise from the fact that in each case I.T.A. pupils are slightly superior to Basal pupils among non-persists, but are greatly superior among persists. The five significant interactions indicate non-representative retention and must be considered in interpreting the findings.

The next step in the analysis was the determination of whether or not treatment differences existed on the seven premeasures utilized in

Table 6:02

Within Projects Analysis of Variance on Stanford Measures
for Basal vs I.T.A. Treatments (Dropouts vs Persists)

Project	Effect	Word Recognition		Paragraph Meaning		Vocabulary		Spelling		Word Study Skills	
		F	P	F	P	F	P	F	P	F	P
Fry	Status	1.400	.237	1.978	.160	.023	.881	.251	.616	2.114	.146
	TrtxSt	.000	.996	.259	.611	.001	.971	.228	.633	.112	.737
Hahn	Status	1.023	.312	1.944	.163	.222	.638	1.500	.221	.008	.929
	TrtxSt	.132	.716	.654	.419	.029	.866	2.920	.088	.371	.543
Hayes	Status	29.330P	.000	32.668P	.000	10.991P	.001	55.270P	.000	33.810P	.000
	TrtxSt	2.454	.117	2.496	.114	.875	.350	.882	.348	2.072	.150
Mazurkiew.	Status	78.465P	.000	60.802P	.000	66.041P	.000	85.116P	.000	81.253P	.000
	TrtxSt	1.389	.239	1.771	.183	7.476**	.006	.684	.408	8.289**	.004
Tanyzer	Status	14.473P	.000	15.193P	.000	9.404P	.002	16.049P	.000	21.410P	.000
	TrtxSt	7.885**	.005	7.600**	.006	1.476	.225	3.014	.083	6.397*	.012

NOTE: Significant status difference favoring non-persists indicated by N or n; persists by P or p. Capital letter in each case designates .01 level of significance; lower case letter, .05 level of significance. One asterisk indicates interaction significant at .05 level; two asterisks, .01 level.

Table 6:03

Unadjusted Cell Means on Stanford Measures
for Dropouts and Persists for Basal vs I.T.A. Treatments

Project	Status	Treatment	No. of Observ.	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills
Fry	Dropouts	Basal	9	22.889	25.111	24.444	12.889	39.444
		ITA	10	23.200	20.300	23.200	8.200	38.700
	Persists	Basal	87	20.862	20.540	24.276	11.563	35.287
		ITA	104	21.154	18.125	22.923	8.135	36.087
Hahn	Dropouts	Basal	93	22.645	21.839	21.850	12.946	38.226
		ITA	74	24.608	23.000	21.946	12.189	39.689
	Persists	Basal	190	22.190	21.237	21.484	13.116	38.642
		ITA	172	23.663	20.913	21.779	10.599	39.012
Hayes	Dropouts	Basal	34	13.324	11.882	19.353	4.088	26.971
		ITA	11	21.909	17.909	20.636	9.909	35.455
	Persists	Basal	52	21.769	23.962	23.846	12.135	38.789
		ITA	82	25.988	23.976	22.854	15.951	41.915
Mazurkiewicz	Dropouts	Basal	65	18.200	16.831	20.292	10.600	35.800
		ITA	104	17.202	14.154	16.308	5.125	28.606
	Persists	Basal	223	23.220	22.561	23.220	14.834	40.924
		ITA	171	23.807	22.328	22.444	10.211	38.901
Tanyzer	Dropouts	Basal	48	16.438	14.229	19.313	8.813	31.417
		ITA	22	18.773	14.182	19.000	7.818	32.773
	Persists	Basal	171	18.099	16.667	21.111	10.795	34.930
		ITA	207	26.010	24.092	22.903	12.440	42.990

the investigation. This across projects analysis of premeasures is reported in Table 6:04. Treatment differences were found on the phonemes, letter names, and learning rate tests. Significant differences favored the I.T.A. treatment on the phonemes test while the Basal group was superior in performance on the letter names and learning rate tests. These findings suggest that an analysis of covariance might be useful in analyzing treatment differences because of the differences in readiness for reading exhibited by the I.T.A. and Basal treatments. Table 6:04 also reveals that girls demonstrated superior readiness for reading as evidenced by performance on the phonemes, letter names, identical forms, and Pintner-Cunningham Intelligence Test. Significant project differences indicate that pupils vary considerably in their readiness for reading from project to project. The means on the various readiness tests are presented in Table 6:05. Except for the three premeasures on which significant differences were found between treatments, performance of the I.T.A. and Basal groups was very similar. Means for boys and girls on the readiness measures are presented in Table 6:06. Girls demonstrated superior readiness on all measures except the word meaning test.

The across projects analysis of variance on the Stanford measures is summarized in Table 6:07. Treatment differences for both first grade and second grade measures are reported in the table. The table reveals a number of significant differences favoring girls on the achievement measures. At the end of first grade girls were significantly superior on tests of word recognition, paragraph meaning, spelling, and word study skills. At the end of second grade girls were superior on tests of word recognition, paragraph meaning, spelling, word study skills, and language. For these particular projects and these particular treatments the superiority of girls on the achievement measures is amazingly consistent. However, the sex by treatment interactions are found to be negligible on all measures. This would indicate that girls are superior on the average for both the Basal and I.T.A. treatments. Neither treatment has a unique influence on the achievement of either boys or girls.

Another interesting finding from Table 6:07 involves project differences. Significant project differences were found on four of the five first grade measures. However, only the language subtest showed significant differences after the second grade even though projects differed significantly in pupil readiness for reading as reported in Table 6:04.

Table 6:07 also yields information concerning treatment by project interactions. The interpretation of treatment differences in the across projects analysis is extremely difficult in the presence of significant treatment by project interactions. A significant interaction indicates

Table 6:04

Across Projects Analysis of Premeasures for Basal vs I.T.A. Comparison

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	9.203F	.003	22.526F	.000	1.227	.270	4.924f	.028	1.352	.247	2.689	.103	10.895F	.001
Treatment	4.692n	.032	13.104B	.000	8.777B	.004	.007	.932	.026	.872	.011	.918	.378	.540
SxT	.143	.706	.095	.759	.000	.984	.000	.988	.081	.776	.166	.684	.752	.387
Project	18.670**	.000	5.064**	.001	37.449**	.000	7.354**	.000	2.521*	.044	3.215*	.015	7.924**	.000
SxP	.718	.581	.348	.845	.489	.744	.232	.920	.115	.977	.415	.797	1.230	.301
TxP	2.113	.082	2.707*	.033	1.606	.176	.709	.587	1.623	.172	1.206	.311	2.396	.053
SxTxP	.173	.952	.285	.887	.282	.889	.041	.997	.091	.985	.764	.551	.189	.944

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for effects involving project in which case numerator degrees of freedom equal 4. Denominator degrees of freedom equal 137.

Table 6:05

Means on Premeasures

for Basal vs I.T.A. Treatments

Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Basal	26.848	36.196**	10.443**	15.930	9.319	9.348	39.988
I.T.A.	29.083*	32.736	9.532	15.970	9.368	9.362	39.583

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:06

Across Project Means on Premeasures for Basal vs I.T.A. by Sex

Sex	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Male	26.326	32.272	9.826	14.923	9.500	9.198	38.795
Female	29.541**	36.698**	10.165	16.964*	9.189	9.509	40.772**

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:07

Across Projects Analysis of Variance on Stanford Measures
for Basal vs I.T.A. Comparison

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	8.913F	.003	4.500f	.036	14.887F	.000	13.201F	.000	.224	.637
Treatment	17.895N	.000	8.071N	.005	1.172	.281	.661	.418	.213	.645
SxT	.038	.845	.253	.616	.006	.939	.292	.590	.002	.968
Project	2.608*	.038	1.019	.400	2.746*	.031	1.966	.103	1.303	.272
SxP	.632	.640	.837	.504	.144	.965	.857	.492	.364	.834
TxP	6.756**	.000	2.024	.094	5.112**	.001	2.640*	.036	1.978	.101
SxTxP	.304	.875	.076	.989	.660	.621	.262	.902	.182	.948

NOTE: Significant differences favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects invloving project in which case numerator degrees of freedom equal 4. Denominator degrees of freedom equal 137.

Table 6:07 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	11.158F	.001	21.579F	.000	6.922F	.009	8.163F	.005	19.670F	.000
Treatment	13.049B	.000	18.382N	.000	2.757	.099	7.873N	.006	.010	.921
SxT	.010	.752	.056	.814	.385	.536	.159	.691	.002	.963
Project	7.373**	.000	1.254	.291	4.342**	.002	.698	.595	3.029*	.020
SxP	.471	.757	.405	.805	.633	.640	.616	.652	.710	.587
TxP	8.429**	.000	1.470	.215	6.535**	.000	4.021**	.004	4.089**	.004
SxTxP	.212	.931	.773	.544	.276	.893	.157	.960	.633	.640

NOTE: Significant differences favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 4. Denominator degrees of freedom equal 137.

that treatments are operating differentially among the five projects. As Table 6:07 reveals, significant treatment by project interactions were found on first grade measures of word recognition, paragraph meaning, spelling, and word study skills. Significant treatment by project interactions at the end of second grade were found for the measures of paragraph meaning, word study skills, and language. A discussion of the analysis of second grade treatment differences on measures for which significant interactions were found will be provided in a later section of this chapter.

Because no interactions were found between treatment and project on the second grade word recognition and spelling subtests, the across projects analysis can be used to discuss these treatment differences. The pupils in the I.T.A. treatment were significantly superior in word recognition at the end of the second grade. The I.T.A. pupils were also superior in spelling achievement after the second grade. The superiority of I.T.A. pupils in spelling is especially interesting because it reverses the trend from the first grade phase of the study. After one year of instruction the Basal pupils were superior in terms of spelling achievement. The actual differences in means for the I.T.A. and Basal pupils are reported on Table 6:08. Reference to the norms of the Stanford Achievement Test, Primary II Battery, Form W, reveals that the differences in word recognition amount to about two months growth while I.T.A. pupils are approximately three months advanced in spelling.

Because significant treatment differences were found on certain measures of pupil readiness, an across projects covariance analysis was the next step. This covariance analysis was similar to the analysis of variance just described except that the seven premeasures were used as covariates. This stage of the analysis was designed to determine whether or not treatment differences existed after adjustments were made for differences between treatments in readiness for reading. The results of this analysis are recorded in Table 6:09. The first line of the table reports F ratios and P values for differences in achievement between boys and girls. The only significant sex difference in achievement was found for the second grade spelling test. Girls were found to be superior spellers at the end of second grade even after adjustments were made for differences in readiness at the beginning of first grade. A comparison of the sex differences as recorded in Table 6:07 and Table 6:09 illustrates that sex differences in achievement at the end of first grade and second grade appear to be a reflection of sex differences in readiness at the beginning of first grade. As Table 6:07 indicates, girls are superior on almost all measures of achievement at the end of the first grade and at the end of the second grade. However, these differences almost all disappear when prereading differences in readiness are taken into account. The actual means for boys and girls are recorded in Table 6:10. The first two lines of the table report actual

Table 6:08

Across Project Means on Stanford Measures

for Basal vs I.T.A. by Treatment

Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted										
Basal	21.493	19.326	20.860	31.931	22.490	12.927**	14.527	38.241	39.446	39.441
I.T.A.	23.970**	20.971**	21.681	32.709	22.233	11.194	17.292**	39.489	42.354**	39.454
Adjusted (7 covariates)										
Basal	21.297	19.167	20.519	31.321	22.270	12.794 **	14.101	38.219	39.686	38.956
I.T.A.	24.173**	21.136**	22.035	33.342	22.462	11.333	17.734**	39.512	42.104**	39.957

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:09

Across Projects Analysis of Covariance on Stanford Measures for Basal vs I.T.A. Comparison (7 covariates)

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	.007	.934	.013	.908	1.086	.299	1.261	.264	7.192M	.008
Treatment	27.230N	.000	11.947N	.001	3.889	.051	3.886	.051	.150	.699
SxT	.046	.831	.406	.525	.035	.852	.415	.520	.040	.841
Project	10.573**	.000	8.648**	.000	11.518**	.000	9.035**	.000	16.912**	.000
SxP	.654	.625	.962	.431	.834	.506	.756	.556	.354	.841
TxP	6.451**	.000	1.960	.104	3.556**	.009	1.914	.112	.650	.628
SxTxP	.557	.694	.188	.944	1.203	.313	.347	.846	.260	.903

NOTE: Significant differences favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 4. Denominator degrees of freedom equal 130. Covariates are all seven premeasures.

Table 6:09 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	1.162	.283	7.074F	.009	.179	.673	.379	.539	3.445	.066
Treatment	7.510B	.007	25.321N	.000	3.012	.085	4.952n	.028	1.763	.187
SxT	.010	.921	.065	.799	.753	.387	.405	.525	.001	.987
Project	11.574**	.000	3.976**	.004	10.180**	.000	3.084*	.018	12.998**	.000
SxP	1.021	.399	.605	.660	.668	.615	.379	.823	.940	.443
TxP	9.360**	.000	1.859	.121	4.815**	.001	3.285*	.013	2.860*	.026
SxTxP	.328	.859	.802	.526	.593	.669	.391	.815	1.540	.194

NOTE: Significant differences favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 4. Denominator degrees of freedom equal 130. Covariates are all seven premeasures.

Table 6:10

Across Project Means on Stanford Measures

on Basal vs I.T.A. by Sex

Sex	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted										
Male	21.816	19.506	19.684	30.401	22.234	11.285	14.344	37.827	39.353	37.637
Female	23.588**	20.752*	22.821**	34.199**	22.492	12.860**	17.402**	39.866**	42.372**	41.235**
Adjusted (7 covariates)										
Male	22.729	20.164	20.878	31.759	22.925**	11.806	14.961	38.702	40.552	38.765
Female	22.686	20.102	21.642	32.858	21.811	12.345	16.793**	39.002	41.188	40.121

* indicates .05 level of significance
** indicates .01 level of significance

achievement on each of the measures. The last two lines on the table report means adjusted for differences in readiness. A comparison of the unadjusted and adjusted means demonstrates how boys and girls become more alike in achievement when premeasure differences in readiness are taken into account.

Adjusting for differences in readiness for reading also results in significant project differences on each of the achievement measures. The mean achievement of projects combining both I.T.A. and Basal treatments differs significantly. In this case adjusting scores statistically to account for project differences in readiness for reading had the effect of bringing about increased variability among projects in reading achievement. Fewer project differences were found on achievement measures in the analysis of variance reported in Table 6:07.

The covariance analysis reported in Table 6:09 also had the effect of reducing treatment by project interactions. The treatment by project interaction on the second grade paragraph meaning test is no longer significant. The degree of interaction has also been reduced on the second grade measures of word study skills and language. Pupils in the I.T.A. and Basal treatments were found not to differ significantly in performance on the paragraph meaning test. However, the difference between the means favors the I.T.A. group as illustrated in the last two lines of Table 6:08. Significant differences are also found to favor the I.T.A. group in word recognition and spelling. The actual means for these subtests are also given in Table 6:08.

Because of the significant project by treatment interactions on the word study skills test and the language test, a within projects analysis was conducted. The findings of the analysis of covariance using all seven premeasures as covariates are presented in Table 6:11. No significant treatment differences were found for the second grade word study skills and language tests in four of the five projects. In the fifth project, however, the I.T.A. pupils were significantly superior in performance on these two tests. The actual means are presented in Table 6:12.

The means for each treatment within each project reveal the reasons for the significant treatment by project interactions on the word study skills and language subtests. On the word study skills test I.T.A. pupils were appreciably superior in projects one and four, slightly superior in project three, similar in achievement to Basal pupils in project two and inferior in project four. On the language test I.T.A. pupils were considerably superior in project five, slightly superior in project three, but inferior in projects one, two, and four. It is obvious that neither treatment is uniquely effective in producing achievement on these two measures.

Table 6:11

Within Projects Analysis of Covariance on Stanford Measures for Basal vs I.T.A. Treatments (7 covariates)

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Fry	Sex	.304	.582	.048	.827	.089	.766	.249	.618	1.863	.175
	Trt	1.986	.161	3.190	.076	.151	.698	.858	.356	.350	.555
	SxT	1.064	.304	.346	.557	2.492	.117	.659	.418	.312	.577
Hahn	Sex	.248	.619	.129	.721	4.064f	.046	.078	.781	.500	.481
	Trt	.686	.409	.000	.984	.374	.542	.194	.660	.537	.465
	SxT	.092	.762	.305	.582	.000	.991	.024	.876	.090	.765
Hayes	Sex	.464	.497	.424	.516	.053	.818	.154	.696	2.628	.107
	Trt	7.666N	.006	.108	.743	.006	.939	.012	.914	.044	.834
	SxT	.848	.359	.168	.682	2.100	.150	.237	.627	.262	.610
Mazurk.	Sex	.594	.442	1.488	.225	.010	.919	3.587	.060	2.589	.110
	Trt	1.227	.270	4.257n	.041	.088	.767	.027	.869	.474	.492
	SxT	.008	.927	.084	.773	.000	.996	.267	.606	.289	.592
Tanyzer	Sex	1.128	.290	1.340	.249	.238	.627	.046	.830	3.043	.083
	Trt	36.254N	.000	11.137N	.001	13.688N	.000	7.895N	.006	.920	.339
	SxT	.392	.532	.039	.843	.256	.614	.495	.483	.135	.714

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, Females by F or f, Males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 130. Covariates are all seven premeasures.

Table 6:11 (continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Fry	Sex	.316	.575	1.106	.295	.418	.519	.000	.994	.256	.614
	Trt	3.430	.066	4.000n	.048	.454	.502	2.503	.116	.356	.552
	SxT	.535	.466	2.491	.117	1.555	.215	1.435	.233	3.453	.065
Hahn	Sex	4.411f	.038	4.087f	.045	1.313	.254	.162	.688	1.198	.276
	Trt	10.410B	.002	.922	.339	.104	.747	.000	.993	.824	.366
	SxT	.101	.751	.031	.860	.103	.749	.000	.992	.127	.722
Hayes	S	.042	.838	.731	.394	.538	.465	.466	.496	.231	.631
	Trt	8.210N	.005	1.943	.166	2.612	.108	.460	.500	.380	.539
	SxT	.597	.441	.252	.616	.532	.467	.006	.941	1.022	.314
Mazurk.	Sex	.057	.812	4.858f	.029	.313	.577	.907	.343	5.450f	.021
	Trt	21.856B	.000	10.748N	.001	2.622	.108	.148	.701	.112	.739
	SxT	.220	.640	.067	.797	.428	.514	.027	.869	1.487	.225
Tanyzer	Sex	.007	.934	.014	.907	.092	.762	.093	.761	.078	.780
	Trt	.651	.421	16.443N	.000	11.673N	.001	13.174N	.000	8.434N	.004
	SxT	.226	.636	.489	.486	.116	.734	.666	.416	.055	.814

NOTE: Significant differences favoring I.T.A. indicated by N or n, Basal by B or b, Females by F or f, Males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 130. Covariates are all seven premeasures.

Table 6:12

Within Projects Means on Stanford Measures for Basal vs I.T.A. Comparison by Treatment

Project	Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Fry	Unadjusted										
	Basal	20.548	20.077	20.223	32.976	23.559	11.170 *	14.433	35.022	40.304	40.199
	I.T.A.	20.914	21.224	17.302	32.168	22.861	7.818	16.035	35.045	42.458	37.284
	Adjusted (7 covariates)										
	Basal	21.324	20.018	21.419	33.380	23.990	11.546	14.427	36.593	40.920	40.474
	I.T.A.	23.163	22.251	20.667	35.354	24.771	9.253	17.433*	37.883	44.783	39.571
Hahn	Unadjusted										
	Basal	22.195	19.273	21.037	31.932	21.489	13.151 *	14.176	38.309	38.871	38.394
	I.T.A.	23.733	20.061	21.334	32.351	21.762	10.799	15.803	39.066	40.498	38.117
	Adjusted (7 covariates)										
	Basal	22.515	18.852	21.693	31.868	21.732	13.405**	14.042	39.206	39.057	38.169
	I.T.A.	23.259	18.863	20.991	31.146	21.202	10.705	15.224	38.851	39.090	37.075
Hayes	Unadjusted										
	Basal	22.603	21.993	25.177	36.782	24.628	12.857	16.473	40.070	39.602	42.322
	I.T.A.	25.533	21.746	23.188	35.209	22.481	15.587	18.493	41.173	40.916	41.204
	Adjusted (7 covariates)										
	Basal	25.253	24.213	28.526	40.616	26.925	13.921	18.164	43.274	43.976	45.085
	I.T.A.	29.497**	24.684	28.720	40.874	26.560	18.181**	21.119	46.602	45.953	46.484

Table 6:12 (continued)

Project	Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Mazurk.	Unadjusted										
	Basal	23.348	19.398	22.765	31.686	23.379	14.896 **	15.110	41.326 *	41.617	39.795
	I.T.A.	23.140	20.040	21.395	28.768	21.577	10.094	17.294	38.244	40.784	36.723
	Adjusted (7 covariates)										
	Basal	21.344	18.613	19.682	29.061	21.594	13.587**	13.848	38.370	40.407	37.426
	I.T.A.	22.426	20.700*	20.093	29.288	21.078	9.131	18.087**	36.168	39.605	36.885
Tanyzer	Unadjusted										
	Basal	18.051	17.851	16.628	29.914	20.862	10.816	13.422	34.879	36.191	38.623
	I.T.A.	26.037**	22.487**	24.065**	36.335**	23.003	12.496	19.123**	42.922 **	46.837**	44.227**
	Adjusted (7 covariates)										
	Basal	18.379	18.055	17.011	29.523	21.182	11.273	12.914	36.093	37.010	39.078
	I.T.A.	24.984**	21.854**	22.720**	35.300**	22.059	12.122	18.765**	41.172**	44.846**	43.515**

* indicates .05 level of significance
** indicates .01 level of significance

This within projects analysis as reported in Tables 6:11 and 6:12 presents important information not apparent in the across projects analysis. This analysis makes possible comparisons between specific Basal programs and specific I.T.A. programs which were used in any given project.

The within projects analysis also reports the extent of the treatment differences in each project. Table 6:12 reveals that although in the across projects analysis, I.T.A. pupils were significantly superior on the word recognition test, only three of the five projects contributed to that finding. Projects directed by Hahn and Hayes showed the two treatments to be almost identical. On the other hand, the I.T.A. pupils were better spellers in all five projects.

Additional tables reporting aspects of the within projects analysis are presented in the appendix.

Subsample for I.T.A. versus Basal

Information about the pupils comprising the subsample for the Basal versus I.T.A. comparison is presented in Table 6:13. Each of the pupils in the subsample was administered individually the Gilmore Oral Reading Test, the Fry Word List, and the Gates Word List.

An analysis of variance was conducted to determine whether or not the I.T.A. and Basal subsamples differed significantly in their readiness for reading. The results of this analysis are summarized in Table 6:14. Only one significant difference was found, that favoring I.T.A. pupils on the phonemes test.

An analysis of covariance was used to evaluate treatment differences on the Gilmore, Fry, and Gates tests. Scores on the seven premeasures were used as covariates. Results are summarized in Table 6:15. Pupils in the I.T.A. treatment were significantly superior in reading accuracy and word recognition. No difference between treatments was found in reading rate. Girls were superior to boys in rate of reading, the only significant sex difference obtained. Actual treatment means are recorded in Table 6:16. Differences between treatments in word recognition appear to be substantial.

Summary of Basal versus I.T.A. Comparison

Pupils taught in Basal programs and pupils taught in I.T.A. programs did not differ significantly in reading comprehension at the end of the second grade. The two groups likewise did not differ in rate of reading. In general, the differences between the two groups in English usage and in mechanics of punctuation were also found to be chance differences. However, pupils whose initial instruction in reading utilized the Initial

Table 6:13

Subjects Used for the Analysis of Subsample Measures for the Basal vs I.T.A. Treatments

Project	Treatment	Males	Females	Total
Fry	Basal	17	17	34
	I.T.A.	23	13	36
Hayes	Basal	21	17	38
	I.T.A.	20	19	39
Mazurkiewicz	Basal	10	11	21
	I.T.A.	10	14	24
Tanyzer	Basal	10	8	18
	I.T.A.	18	14	32

Table 6:14

Across Projects Analysis of Variance on Premeasures for Subsample for Basal vs I.T.A. Treatments

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	7.081F	.008	3.325	.070	3.016	.084	4.010f	.046	.502	.479	.090	.764	5.922f	.016
Treatment	7.311N	.007	.484	.488	.012	.911	.045	.833	.029	.864	.608	.436	.617	.433
SxT	.000	.996	.211	.646	.008	.928	.009	.923	.438	.509	.303	.582	1.856	.174
Project	20.901**	.000	8.718**	.000	24.505**	.000	5.251**	.002	5.270**	.002	1.164	.324	11.632**	.000
SxP	1.742	.159	.709	.548	.664	.574	2.880*	.037	.884	.450	.405	.750	1.702	.167
TxP	1.179	.318	2.559	.056	.253	.859	1.190	.314	2.570	.055	2.493	.061	.701	.553
SxTxP	.190	.903	.723	.539	.220	.882	.172	.915	.572	.634	.544	.652	.102	.959

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for effects involving project in which case numerator degrees of freedom equal 3. Denominator degrees of freedom equal 226.

Table 6:15

Across Projects Analysis of Covariance on Subsample Measures
for Basal vs I.T.A. Comparison (7 covariates)

Effect	Gilmore Accuracy		Gilmore Rate		Fry Word List		Gates Word List	
	F	P	F	P	F	P	F	P
Sex	2.294	.131	6.281f	.013	1.219	.271	.022	.882
Treatment	8.242N	.004	1.012	.316	27.649N	.000	36.962N	.000
SxT	2.013	.157	.014	.904	.831	.363	3.353	.068
Project	2.784*	.042	11.597**	.000	92.305**	.000	1.747	.158
SxP	.872	.456	2.029	.111	1.120	.342	.355	.785
TxP	2.689*	.047	.754	.521	1.685	.171	.991	.398
SxTxP	.472	.702	.755	.521	.503	.681	.917	.434

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal 1 except for effects involving project where d.f. equal 3. Denominator d.f. equal 219.

Table 6:16

Means on Subsample Measures for Basal vs I.T.A. Treatments

Treatment	Gilmore Accuracy	Gilmore Rate	Fry Word List	Gates Word List
Unadjusted				
Basal	41.937	88.658	21.000	26.766
I.T.A.	47.916**	90.244	25.649**	35.145**
Adjusted (7 covariates)				
Basal	42.300	87.952	21.195	26.856
I.T.A.	47.608**	90.842	25.484**	35.069**

* indicates .05 level of significance
** indicates .01 level of significance

Teaching Alphabet were significantly superior in word recognition skills and spelling skills at the end of the second grade. Pupils in the I.T.A. treatment were significantly superior in performance on the Stanford Word Meaning test, the Fry Test of Phonetically Regular Words, and the Gates Test of High Frequency Words. Furthermore, significant differences favored the I.T.A. group on the Stanford Spelling test. It appears that the use of a regular code for initial instruction in reading produces better-than-average ability to decode the printed word and encode the spoken language.

Basal versus Language Experience Comparison

The materials which comprised the Basal program in each of the projects which had in common a Basal program and a Language Experience program are reported in Table 6:17. In two of the three projects no special basal series was prescribed. Teachers were encouraged to use any of the current basal programs. The Language Experience approaches also obviously differed in the way they were implemented from project to project, but for purposes of the analysis they were assumed to be similar treatments. Data from three projects were utilized for the analysis of differences in achievement between Language Experience and Basal approaches in the second grade phase of the study. Four projects were used in the analysis of first grade differences in achievement but one project had to be dropped because deviations from the prescribed data card format made it impossible to collate first and second grade data.

Table 6:17 also reports the number of classes and pupils in first and second grades which comprised the Basal and Language Experience treatments within each of the three projects. In two of the three projects substantial numbers of pupils were dropped from the second grade phase of the study because of incomplete data even though they had completed all tests during the first grade.

A comparison of first grade achievement of the persists and non-persists is reported in Table 6:18. In the first project listed the persists were significantly superior in achievement to the non-persists on each of the five first grade achievement measures. A similar finding held true for the third project listed. Significant differences favoring the persists were found for two of the five achievement measures in the second project. In general, therefore, the sample utilized in the second grade phase of the study was superior in achievement to the group utilized in the first grade stage of the investigation. However, only one of the fifteen treatment by status interactions was found to be statistically significant. The achievement of Basal and Language Experience pupils among the persists exhibited the same relationship to one another as the achievement of Basal and Language Experience pupils among the non-persists.

Table 6:17

Materials and Numbers of Classes and Pupils for Basal vs Language Experience

	Cleland				Hahn				Stauffer			
	Classes		Pupils		Classes		Pupils		Classes		Pupils	
	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade
Numbers												
Basal	12	9	365	212	12	10	283	182	10	10	224	167
Language Experience	11	9	285	170	12	11	270	180	10	10	239	180
Materials												
Basal	Scott-Foresman				Variety				Variety			

Table 6:18

Within Projects Analysis of Variance on Stanford Measures for Basal vs Language Experience Treatments (Dropouts vs Persists)

Project	Effect	Word Recognition		Paragraph Meaning		Vocabulary		Spelling		Word Study Skills	
		F	P	F	P	F	P	F	P	F	P
Cleland	Status	53.216P	.000	38.572P	.000	37.221P	.000	83.947P	.000	37.442P	.000
	TrtxSt	2.074	.150	.062	.803	.935	.334	.017	.897	.673	.412
Hahn	Status	1.107	.293	4.367P	.037	.224	.636	6.282p	.012	2.324	.128
	TrtxSt	3.271	.071	8.345**	.004	1.219	.270	5.117	.024	1.196	.274
Stauffer	Status	62.434P	.000	48.697P	.000	62.664P	.000	64.904P	.000	108.767P	.000
	TrtxSt	3.102	.078	.885	.347	2.400	.121	1.340	.247	.173	.678

NOTE: Significant status difference favoring non-persists indicated by N or n; persists by P or p. Capital letter in each case designates .01 level of significance; lower case letter, .05 level of significance. One asterisk indicates interaction significant at .05 level; two asterisks, .01 level.

The treatment means within each status (non-persists or persists) for each project are reported in Table 6:19. The reason for the one significant interaction is evident. Among the dropouts in the second study the Basal pupils were superior to the Language Experience students on the paragraph meaning test. However, among the persists the Language Experience pupils were superior to the Basal pupils. However, the absence of significant interactions on fourteen of the fifteen variables indicates that the attrition between the first and second grade should have little effect on the analysis of treatment differences in second grade achievement.

The first step in analyzing treatment differences between the Language Experience and Basal approaches consisted of an across projects analysis of variance on the premeasures. This analysis was designed to determine whether or not pupils in the two treatments were equivalent in reading readiness. The results are summarized in Table 6:20. Only one significant treatment difference on the premeasures was found, that favoring the Basal approach on the identical forms test. Taken as a group, the three projects were successful in assigning pupils of equal prereading capability to the Basal and Language Experience treatments. The across projects means are presented in Table 6:21. Although only one treatment difference was significant, the pupils in the Language Experience approach were somewhat superior on six of the seven prereading measures.

The analysis of variance on premeasures also indicated that significant project differences were found on six of the seven readiness tests. Pupils differed significantly from one project to another in their readiness for reading. Sex differences were found on three of the seven premeasures. Girls were significantly superior in performance on the letter names and identical forms tests, while boys demonstrated superiority on the Metropolitan Meaning test. The actual means according to sex are presented in Table 6:22. Girls were superior in performance on six of the seven measures although only two of the differences were statistically significant.

The across projects analysis of variance of Stanford measures is reported in Table 6:23. Again an evaluation was made of differences in achievement at the end of both the first and second grades. Significant project differences were found on each of the measures. Significant sex differences favoring girls were found in achievement as measured by the first grade paragraph meaning test, the first grade spelling test, and the second grade spelling test. Mean achievement of boys and girls on the Stanford measures is reported in Table 6:24. As a general rule, girls were superior on the achievement measures at the end of first grade and second grade although in most cases the differences were not statistically significant. Again no significant sex by treatment interactions were found to exist. The superiority of girls is consistent

Table 6:19

Unadjusted Cell Means on Stanford Measures for Dropouts and Persists for Basal vs Language Experience Treatments

Project	Status	Treatment	No. of Observ.	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills
Cleland	Dropouts	Basal	153	20.510	22.255	20.876	13.170	36.379
		LE	115	21.322	24.217	23.096	12.522	37.313
	Persists	Basal	212	23.929	26.991	24.594	17.651	40.651
		LE	170	26.388	28.582	25.771	16.877	42.894
Hahn	Dropouts	Basal	93	22.645	21.839	21.850	12.946	38.226
		LE	87	22.632	19.437	21.724	12.035	37.885
	Persists	Basal	190	22.190	21.237	21.484	13.116	38.642
		LE	183	24.514	23.683	22.705	14.694	40.273
Stauffer	Dropouts	Basal	57	12.193	10.965	14.719	5.333	25.070
		LE	59	13.441	13.017	14.220	6.203	26.119
	Persists	Basal	167	16.796	16.862	19.227	9.751	35.608
		LE	180	20.704	20.759	20.935	12.111	37.533

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:20

Across Projects Analysis of Variance on Premeasures for Basal vs Language Experience Treatments

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	3.286	.073	7.945F	.006	.195	.660	7.396 F	.008	5.002m	.027	.003	.959	1.516	.221
Treatment	1.811	.181	1.050	.308	2.035	.157	15.299 B	.000	1.046	.309	.193	.662	.081	.776
SxT	.288	.593	.357	.551	.010	.921	.577	.449	.001	.975	.006	.938	.084	.772
Project	11.048**	.000	15.229**	.000	11.504**	.000	1.716	.185	14.056**	.000	3.884*	.024	5.178**	.007
SxP	.023	.977	.021	.979	.028	.972	.292	.747	.027	.973	.362	.697	.546	.581
TxP	6.035**	.003	.947	.391	.179	.836	3.130*	.048	2.287	.107	.678	.510	.807	.449
SxTxP	.043	.958	.016	.985	.056	.945	.204	.816	.593	.555	.607	.547	.173	.841

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 103, except for effects involving project which are 2 and 103.

Table 6:21

Across Projects Means on Premeasures
for Basal vs Language Experience Treatments

Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Basal	22.069	32.690	8.684	20.066**	8.702	9.218	38.323
Language Experience	24.081	34.070**	9.309	16.235	9.025*	9.327	38.605

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:22

Across Projects Means on Premeasures
for Basal vs Language Experience Treatments by Sex

Sex	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Male	21.715	31.505	8.896	16.816	9.226*	9.265	37.870
Female	24.394	35.211**	9.089	19.496 **	8.504	9.278	39.044

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:23

Across Projects Analysis of Variance on Stanford Measures for Basal vs Language Experience Comparison

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	2.171	.144	2.307	.132	5.701f	.019	2.404	.124	.272	.603
Treatment	13.552N	.000	2.601	.110	6.273n	.014	1.273	.262	3.856	.052
SxT	.103	.749	.152	.697	.058	.810	.113	.737	.012	.911
Project	20.657**	.000	12.752**	.000	23.581**	.000	13.159**	.000	14.389**	.000
SxP	.102	.903	.062	.940	.295	.745	.295	.745	.211	.810
TxP	.834	.437	.762	.469	.609	.546	.809	.448	.073	.929
SxTxP	.571	.567	.054	.947	.094	.911	.587	.558	.485	.617

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 103, except for effects involving project which are 2 and 103.

Table 6:23 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	5.308f	.023	10.991F	.001	1.825	.180	1.027	.313	3.022	.085
Treatment	2.702	.103	3.791	.054	3.027	.085	1.162	.284	2.730	.102
SxT	.045	.833	.467	.496	.001	.975	.024	.877	.076	.784
Project	27.949**	.000	11.294**	.000	6.220**	.003	5.678**	.005	9.949**	.000
SxP	.292	.747	.014	.986	.285	.752	.110	.896	.110	.896
TxP	2.334	.102	.226	.798	.016	.984	1.824	.166	.817	.445
SxTxP	.466	.629	.285	.752	.072	.930	.410	.665	.117	.890

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter .05 level. One asterisk indicates .05 level os significance; two asterisks, .01 level. Degrees of freedom are 1 and 103, except for effects infolving project which are 2 and 103.

Table 6:24

Across Projects Means on Stanford Measures

for Basal vs Language Experience by Sex

Sex	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted Male	21.833	19.143	21.691	32.060	22.573	13.212	14.430	38.466	38.722	38.329
Female	22.962	20.353	24.132*	34.015	22.192	14.702*	17.120**	39.921	39.989	40.314
Adjusted (7 covariates) Male	22.181	19.814	22.282	33.111	23.121**	13.335	15.100	38.976	39.913	39.276
Female	22.619	19.693	23.551	32.982	21.654	14.581*	16.462	39.420	38.818	39.383

* indicates .05 level of significance
** indicates .01 level of significance

across treatments and neither the Basal nor Language Experience treatment has a unique effect on the achievement of either sex.

The analysis of variance revealed no significant differences in achievement between Language Experience and Basal pupils on any of the second grade measures. Although Language Experience pupils were superior in word recognition and reading comprehension at the end of the first grade, these differences have disappeared by the end of the second grade. Furthermore, no treatment by project interactions were found to be statistically significant. The two treatments operated in the same fashion across the three projects in this section of the study.

Because some slight differences in readiness for reading favored the Language Experience pupils, a covariance analysis was conducted. This analysis utilized all seven premeasures as covariates. The results are summarized in Table 6:25. One effect of the covariance analysis was to erase all significant differences related to sex except for achievement in first grade spelling and vocabulary. As was true in most of the analyses of sex differences in this study, adjusting for differences in reading readiness eliminated differences in first and second grade reading ability. The adjusted means in Table 6:24 indicate that similarity in mean achievement for boys and girls when differences in readiness are taken into account.

Table 6:25 also reveals significant project differences in achievement on each of the variables even though differences in pupil readiness for reading were adjusted statistically. Treatment by project interactions, however, are non-significant in each case. Moreover, no significant treatment differences exist for any second grade achievement measures. The adjusted means in the last two lines of Table 6:26 indicate how similar the Basal and Language Experience pupils were in achievement after the second grade when adjustments were made for differences in reading readiness.

Since no project by treatment interactions were found to be statistically significant, there was no need for a within projects analysis. However, such an analysis was conducted and information pertinent to this analysis is presented in the appendix. The reader is encouraged to study the tables which present within projects information because they reveal information which cannot be gathered from the across projects analysis discussed in this chapter. The similarities or differences between readiness of Basal and Language Experience pupils within each project are presented. Furthermore, the effectiveness of the Basal and Language Experience treatments can be evaluated within each of the projects. Since these programs differed from project to project it would be of interest to note how each of the treatments fared in each of the three projects involved in this comparison.

Table 6:25

Across Projects Analysis of Covariance on Stanford Measures for Basal vs Language Experience Comparison (7 covariates)

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	.448	.505	.038	.846	2.452	.121	.016	.900	7.976M	.006
Treatment	10.509N	.002	.594	.443	4.098n	.046	.005	.943	4.455n	.037
SxT	.001	.982	.004	.950	.001	.973	.007	.933	.207	.650
Project	7.374**	.001	5.077**	.008	23.340**	.000	8.569**	.000	21.471**	.000
SxP	.190	.827	.141	.869	1.022	.364	.371	.691	.217	.805
TxP	1.132	.327	.919	.402	.769	.466	.399	.672	2.770	.068
SxTxP	.796	.454	.253	.777	.155	.856	.860	.426	.692	.503

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 96, except for effects involving project which are 2 and 96. All seven premeasures were used as covariates.

Table 6:25 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	3.941f	.050	3.345	.070	.221	.640	1.126	.291	.014	.906
Treatment	.717	.399	2.097	.151	1.554	.216	.524	.471	2.683	.105
SxT	.036	.849	.211	.647	.036	.850	.059	.808	.004	.950
Project	16.812**	.000	8.220**	.001	6.138**	.003	3.832*	.025	9.228**	.000
SxP	.636	.532	.034	.966	.202	.818	.176	.839	.240	.787
TxP	1.095	.339	.444	.643	1.771	.176	.110	.896	1.252	.290
SxTxP	.642	.528	.378	.686	.116	.891	.452	.637	.273	.762

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 96, except for effects involving project which are 2 and 96. All seven premeasures were used as covariates.

Table 6:26

Across Projects Means on Stanford Measures

for Basal vs Language Experience by Treatment

Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted										
Basal	20.999	19.112	21.642	32.332	21.670	13.430	14.992	38.265	38.687	38.386
Lang Expr	23.830**	20.406	24.224*	33.772	23.105	14.506	16.596	40.151	40.046	40.290
Adjusted (7 covariates)										
Basal	21.419	19.532	22.158	33.013	21.880	13.712	15.282	38.653	39.020	38.646
Lang Expr	23.403**	19.979	23.700*	33.080	22.890*	14.219	16.301	39.757	39.707	40.026

* indicates .05 level of significance
** indicates .01 level of significance

The treatment means for each project are reported in Table 6:27. The similarity of the Language Experience and Basal pupils in second grade achievement is very consistent among the three projects.

Subsample for Language Experience versus Basal

A sample from each treatment was administered individually the Gilmore Oral Reading Test and the Fry Word List. The Gates test was not administered in one project and therefore no analysis of treatment differences on that test was undertaken. Furthermore, one of the three projects which comprised the Basal versus Language Experience treatment comparison was not utilized at this phase of the investigation because of clerical errors in card punching. The number of boys and girls in each treatment within each project is reported in Table 6:28.

To determine whether or not the Language Experience and Basal pupils could be considered equal in readiness for reading an analysis of variance was conducted on the scores from the seven premeasures. The results of this analysis are presented in Table 6:29. Only one significant difference, that favoring the Basal treatment on the identical forms test, was found. Therefore, the two groups were very similar in their readiness for reading.

An analysis of covariance was conducted on the individual outcome measures to determine whether differences existed between the Basal and Language Experience treatments in pupil performance on the Gilmore accuracy, Gilmore rate, and Fry word list measures of reading achievement. All seven premeasures were used as covariates in this analysis which is presented in Table 6:30.

Treatment differences on the Gilmore accuracy and Gilmore rate scores were not statistically significant. The Language Experience pupils were significantly superior on the Fry word list. The unadjusted and adjusted means for the Basal and Language Experience pupils are reported in Table 6:31. Each of the mean differences favor the Language Experience approach although only the difference on the Fry word list was statistically significant.

Summary of Basal versus Language Experience Comparison

In general, no significant differences were found between the Language Experience and Basal treatments in end-of-second-grade achievement. Pupils from the two treatments were found to be similar in spelling ability, language ability, word study skills, paragraph comprehension, and word recognition. The pupils who comprised the Language Experience

Table 6:27

Within Projects Means on Stanford Measures for Basal vs Language Experience Comparison by Treatment

Project	Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Cleland	Unadjusted										
	Basal	24.077	22.049	27.252	37.625	24.516	17.613	18.184	40.836	42.823	42.655
	Lang Expr	25.783	21.821	28.086	36.543	25.503	16.563	18.917	42.347	40.721	42.644
	Adjusted (7 covariates)										
	Basal	22.698	20.519	25.614	35.535	23.454	16.930	16.644	39.710	40.375	40.076
	Lang Expr	25.763 **	21.834	28.444 *	36.559	26.070 **	16.296	18.600	43.191 *	41.037	43.083*
Hahn	Unadjusted										
	Basal	22.195	19.273	21.037	31.932	21.489	13.151	14.176	38.309	38.871	38.394
	Lang Expr	24.502	21.431	23.859	34.530	22.875	14.683	16.013	40.378	40.775	40.098
	Adjusted (7 covariates)										
	Basal	21.488	18.404	20.089	30.626	20.502	13.028	13.634	37.242	37.294	36.881
	Lang Expr	22.450	19.072	20.976	30.949	20.567	13.491	14.199	37.437	37.558	36.836
Stauffer	Unadjusted										
	Basal	17.033	16.306	17.199	27.968	19.289	9.944	12.935	35.906	34.781	34.536
	Lang Expr	21.093 **	17.796	20.788 **	30.118	20.974	12.243*	14.954	37.809	38.521	38.161
	Adjusted (7 covariates)										
	Basal	20.198	19.770	21.116	33.129	21.842	11.501	15.705	39.112	39.527	39.122
	Lang Expr	22.154	19.162	22.132	32.088	22.421	12.991	16.453	39.028	40.885	40.692

* indicates .05 level of significance

** indicates .01 level of significance

Table 6:28

Subjects Used for the Analysis of Subsample Measures for the Basal vs Language Experience Treatments

Project	Treatment	Males	Females	Total
Cleland	Basal	26	23	49
	Lang Expr	24	26	50
Hahn	Basal	13	19	32
	Lang Expr	20	30	50

Table 6:29

Across Projects Analysis of Variance on Premeasures for Subsample for Basal vs Language Experience Treatments

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	.015	.903	.563	.454	.016	.898	3.543	.061	2.132	.146	1.665	.199	1.575	.211
Treatment	.429	.513	.110	.741	.317	.574	7.760B	.006	.137	.712	.011	.918	.177	.675
SxT	.232	.631	.082	.774	.142	.707	.842	.360	.372	.543	.153	.696	.420	.706
Project	6.203*	.014	.250	.617	4.078*	.045	.196	.659	19.270**	.000	.700	.404	9.625**	.002
SxP	.617	.433	1.307	.255	1.142	.287	1.675	.197	.093	.761	2.149	.144	.248	.619
TxP	.949	.331	.385	.536	.060	.807	9.152**	.003	.317	.574	.000	.999	.105	.746
SxTxP	.126	.723	1.324	.251	.655	.419	1.513	.220	.139	.710	.665	.416	.279	.598

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 173.

Table 6:30

Across Projects Analysis of Covariance on Subsample Measures
for Basal vs Language Experience Comparison (7 covariates)

Effect	Gilmore Accuracy		Gilmore Rate		Fry Word List	
	F	P	F	P	F	P
Sex	.202	.654	.703	.403	.126	.723
Treatment	3.038	.083	.281	.597	3.966n	.048
SxT	2.432	.121	.769	.382	8.815**	.003
Project	.519	.472	4.836*	.029	.426	.515
SxP	.013	.908	2.228	.137	.256	.614
TxP	.974	.325	.491	.485	3.343	.069
SxTxP	2.303	.131	1.771	.185	1.803	.181

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, female by F or f, male by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Two asterisks indicate .01 level of significance, one asterisk, .05 level. Degrees of freedom are 1 and 166.

Table 6:31

Means on Subsample Measures for Basal vs Language Experience Treatments

Treatment	Gilmore Accuracy	Gilmore Rate	Fry Word List
Unadjusted			
Basal	40.111	93.481	25.778
Lang Expr	42.990	95.180	27.260*
Adjusted (7 covariates)			
Basal	39.976	93.248	25.681
Lang Expr	43.099	95.369	27.338*

* indicates .05 level of significance
** indicates .01 level of significance

subsample were found to be significantly superior on the Fry word list, but this superiority in word recognition did not exist on the Stanford Achievement Test. Achievement after two years of instruction in these two quite different programs was very similar. The similarity in achievement included the measures of reading, which might reasonably be expected to favor the Basal approach, and the measures of writing (spelling and language), which might reasonably be expected to favor the Language Experience approach.

Basal versus Linguistic Comparison

A description of the materials comprising the Basal and Linguistic groupings is presented in Table 6:32. Three different basal programs were used in the three projects. However, for purposes of the analysis the programs were assumed to be similar. Four different programs were used in the three projects as part of the Linguistic method group. In addition, pupils in the Fries, Bloomfield-Barnhart, and Singer materials transfered to basal materials when they completed the Linguistic program. Therefore, the issue in this analysis involves the relative effectiveness of initial instruction in Linguistic materials (see Chapter IV for characteristics) and typical basal materials. The assumption is made that any advantage or disadvantage resulting from initial instruction in a Linguistic program will carry over into whatever program pupils next encounter.

Information is also given in Table 6:32 concerning the numbers of classes and pupils for the Basal and Linguistic treatments in each of the projects. Attrition was substantial in each of the projects as evidenced by the decrease in numbers of students and classes. For the second grade phase of the study fifty-one classes were utilized.

A comparison of the achievement of those pupils who dropped out after the first grade and those who persisted in the study is reported in Table 6:33. The persists were statistically superior in the first grade achievement on each of the achievement measures in each of the projects. Therefore, those pupils who participated in the second grade phase of the study are somewhat superior to the pupils who participated only in the first grade phase of the study. However, only four treatment by status interactions were significant, each of these at the .05 level of significance.

The reason for these significant interactions can be found in Table 6:34. The significant interaction on the word meaning variable in Ruddell's project results from the fact that among dropouts or non-persists Basal pupils were superior to Linguistic pupils, while among persists just the reverse was true. This finding indicates some selectivity in retention and must be considered in interpreting the second-grade results. This same selectivity shows up on all of the first-grade

Table 6:32

Materials and Numbers of Classes and Pupils for Basal vs Linguistic

	Ruddell				Schneyer				Sheldon			
	Classes		Pupils		Classes		Pupils		Classes		Pupils	
	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade
Numbers												
Basal	6	6	119	76	12	11	334	220	7	6	138	104
Linguistic	5	3	102	53	12	11	345	260	14	14	304	246
Materials												
Basal	Allyn-Bacon				Scott-Foresman				Ginn			
Linguistic	McGraw-Hill				Fries				Singer Bloomfield-Barnhart			

Table 6:33

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Linguistic Treatments (Dropouts vs Persists)

Project	Effect	Word Recognition		Paragraph Meaning		Vocabulary		Spelling		Word Study Skills	
		F	P	F	P	F	P	F	P	F	P
Ruddell	Status	23.248P	.000	17.867P	.000	8.861P	.003	28.829P	.000	14.556P	.000
	TrtxSt	5.867*	.016	5.060*	.025	3.035	.082	6.712*	.010	3.034	.082
Schneyer	Status	30.132P	.000	30.474P	.000	16.294P	.000	32.240P	.000	33.065P	.000
	TrtxSt	.821	.365	.055	.814	.409	.523	4.993*	.026	2.012	.156
Sheldon	Status	12.882P	.000	8.497P	.004	13.081P	.000	26.423P	.000	18.256P	.000
	TrtxSt	1.552	.213	.068	.795	3.611	.058	.024	.876	.431	.512

NOTE: Significant status difference favoring non-persists indicated by N or n; persists by P or p. Capital letter in each case designates .01 level of significance; lower case letter, .05 level of significance. One asterisk indicates interaction significant at .05 level; two asterisks, .01 level.

Table 6:34

Unadjusted Cell Means on Stanford Measures for Dropouts and Persists for Basal vs Linguistic Treatments

Project	Status	Treatment	No. of Observ.	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills
Ruddell	Dropouts	Basal	42	16.571	16.071	19.452	7.071	31.500
		Ling	39	15.359	9.641	15.795	4.462	27.564
	Persists	Basal	77	19.416	18.974	20.766	9.688	34.818
		Ling	63	23.635	18.746	20.540	11.714	36.206
Schneyer	Dropouts	Basal	112	16.866	15.786	19.152	9.938	33.321
		Ling	85	13.647	12.235	16.929	5.318	27.118
	Persists	Basal	222	20.031	20.225	21.928	11.896	37.437
		Ling	260	18.050	17.069	18.939	9.712	33.873
Sheldon	Dropouts	Basal	30	19.733	19.500	20.900	10.400	35.867
		Ling	55	16.382	14.127	20.509	7.273	33.000
	Persists	Basal	108	21.537	23.398	26.213	14.537	42.704
		Ling	249	20.727	17.374	22.418	11.157	38.012

achievement measures in Ruddell's project. The Basal non-persists were superior to the Linguistic non-persists while Linguistic persists were equal to or superior to Basal persists. There was little or no evidence of this type of non-representative retention in the other projects involved in the Basal versus Linguistic comparison.

The first step in the evaluation of Linguistic and Basal programs was to perform an analysis of variance on the premeasures. This analysis was performed blocking on sex, treatment, and project. The results of the analysis are reported in Table 6:35. No sex differences in readiness for reading were reported for the pupils in these three projects. This is a somewhat unusual finding. In most of the projects represented in this study girls were superior in readiness for reading. Significant project differences were found for six of the seven premeasures indicating that pupils differed in their readiness for reading among the three projects. No treatment differences were found in readiness. This finding demonstrates the similarity in readiness for reading of the Basal and Linguistic pupils, a fact further demonstrated by the similarity of treatment means as recorded in Table 6:36. The mean performance on the readiness measures of boys and girls is presented in Table 6:37. Although none of the sex differences were significant, girls scored better on six of the seven measures.

The analysis of variance on Stanford measures is summarized in Table 6:38. This analysis was also conducted blocking on sex, treatment and project. Treatment differences in achievement were analyzed for both first and second grade measures. The table reveals significant project differences in first grade word recognition, second grade word recognition, second grade paragraph meaning, first grade knowledge of vocabulary, first grade spelling, first grade study skills, and second grade word study skills. No significant sex differences were found on any of the achievement measures. This finding is again unusual contrasted with the findings of the other basal versus non-basal treatment interactions indicating that the treatments operated in the same fashion within each of the projects, thereby making possible an analysis of treatment differences across the three projects.

No significant treatment differences were found on any of the first grade or second grade measures of achievement. In actual achievement, after one year or two years of instruction, pupils in the Basal programs and Linguistic programs did not differ significantly in achievement. The similarity of the Linguistic and Basal means is revealed in the first two rows of Table 6:39. Some of the slight differences favored the Basal approach while others favored the Linguistic approach but no overall trend was evident.

Table 6:35

Across Projects Analysis of Premeasures

for Basal vs Linguistic Comparison

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	.955	.331	1.410	.238	.195	.660	1.344	.250	.909	.343	.201	.655	.934	.337
Treatment	.203	.654	.039	.844	1.437	.234	.332	.566	.322	.572	1.187	.279	.000	.996
SxT	.083	.773	.222	.639	.100	.753	.156	.694	.080	.778	.024	.876	.126	.723
Project	19.660**	.000	3.685*	.029	8.019**	.001	1.875	.160	14.893**	.000	17.268**	.000	17.978**	.000
SxP	.010	.990	.269	.765	.167	.846	.239	.788	.113	.893	.557	.575	.128	.880
TxP	1.253	.291	.976	.381	.304	.739	2.327	.104	.989	.376	1.306	.276	.390	.678
SxTxP	.019	.981	.022	.978	.045	.956	.175	.840	.065	.937	.109	.897	.064	.938

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for effects involving project in which case numerator degrees of freedom equal 2. Denominator degrees of freedom equal 86.

Table 6:36

Means on Premeasures

for Basal vs Linguistic Treatments

Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Basal	24.785	32.366	10.276	14.721	8.831	9.144	35.357
Linguistic	23.890	32.792	9.698	15.400	8.551	8.797	35.344

Table 6:37

Across Project Means on Premeasures
on Basal vs Linguistic by Sex

Sex	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Male	23.304	31.285	9.844	14.406	8.913	8.877	34.549
Female	25.222	33.873	10.055	15.771	8.444	9.019	36.119

Table 6:38

Across Projects Analysis of Variance on Stanford Measures
for Basal vs Linguistic Comparison

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	.613	.436	.341	.561	1.568	.214	1.240	.269	.002	.963
Treatment	.137	.712	.062	.804	2.110	.150	.156	.694	1.943	.167
SxT	.036	.851	.006	.938	.003	.956	.003	.953	.006	.939
Project	3.293*	.042	5.148**	.008	1.415	.248	3.418*	.037	7.794**	.001
SxP	.024	.977	.083	.921	.007	.993	.002	.998	.070	.932
TxP	1.374	.259	.170	.844	1.044	.356	.039	.962	.875	.421
SxTxP	.091	.913	.109	.897	.027	.973	.004	.996	.242	.786

NOTE: Significant differences favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 2. Denominator degrees of freedom equal 86.

Table 6:38 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	1.682	.198	1.926	.169	1.539	.218	.663	.418	.726	.396
Treatment	.764	.385	.606	.438	.580	.448	2.390	.126	.342	.560
SxT	.051	.822	.019	.890	.014	.906	.049	.826	.004	.947
Project	3.840*	.025	1.916	.153	5.680**	.005	4.747*	.011	2.499	.088
SxP	.077	.925	.181	.834	.088	.916	.071	.932	.189	.828
TxP	1.281	.283	.376	.688	.575	.565	.054	.947	.001	.999
SxTxP	.014	.986	.028	.972	.045	.955	.106	.899	.080	.923

NOTE: Significant differences favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 2. Denominator degrees of freedom equal 86.

Table 6:39

Means on Stanford Measures

for Basal vs Linguistic Treatments

Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted										
Basal	19.386	17.973	19.536	29.882	22.055	11.481	12.413	37.075	37.311	37.693
Linguistic	19.864	18.287	17.162	28.947	20.499	10.553	13.433	35.719	34.220	38.730
Adjusted (7 covariates)										
Basal	19.235	17.660	19.271 **	29.393	21.967 **	11.377	12.276	36.817	36.907 *	37.213
Linguistic	19.983	18.532	17.370	29.329	20.568	10.634	13.540*	35.920	34.537	39.106 *

* indicates significance at .05 level
** indicates significance at .01 level

Despite the absence of treatment differences in readiness for reading a covariance analysis was conducted. This analysis was designed to determine whether or not treatment differences existed across projects if scores were adjusted for differences in readiness. The results of this covariance analysis are summarized in Table 6:40. The use of the covariance technique resulted in one significant sex difference, that favoring girls on the paragraph meaning test. No differences in achievement between boys and girls were found on any of the other measures. Significant project differences were found for each of the first grade and second grade measures. Significant treatment by project interactions were now found for the word recognition variable in both the first and second grades and the spelling variable in the second grade. Therefore, an analysis of the treatment differences on these two variables cannot be made unambiguously. A within projects analysis, which will be reported in the next section of this chapter was necessary to analyze differences on these achievement measures.

However, treatment by project interactions were not significant for the second grade measures of paragraph meaning, word study skills, or language. Therefore, an analysis of treatment differences for these variables was possible. No differences between the Basal and Linguistic treatments were found for the paragraph meaning test administered at the end of the second grade. Statistically significant differences were found to favor the Basal approach on the word study skills test and the Linguistic approach on the language test after two years of instruction. The adjusted means corresponding to this phase of the analysis are found in the last two lines of Table 6:39. Reference to the norms of the Stanford Achievement Test, Primary II Battery, indicate a superiority of approximately one month for the Basal group in word study skills and a superiority of approximately one month for the Linguistic group in performance on the language test. These differences are negligible after two years of instruction.

The mean achievement for boys and girls on each of the measures is presented in Table 6:41. The first two lines of the table present unadjusted means which show a trend favoring girls although none of the differences were significant. The last two lines of the table present achievement means adjusted for differences in readiness. Again the differences tend to favor girls although the means are more similar. Only one significant difference, that favoring girls on the first grade paragraph meaning test, was found.

Because significant treatment by project interactions were found for the second grade word recognition and spelling variables, a within projects analysis of covariance was conducted. This analysis is reported in Table 6:42. A significant treatment difference on the second grade word recognition test favored the Linguistic approach in one of the three projects. No differences were found between treatments in

Table 6:40

Across Projects Analysis of Covariance on Stanford Measures for Basal vs Linguistic Comparison (7 covariates)

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	.586	.446	.898	.346	4.503f	.037	3.376	.070	.185	.669
Treatment	1.695	.197	1.746	.190	7.937B	.006	.003	.953	7.137B	.009
SxT	.113	.738	.492	.485	.484	.489	.263	.610	.589	.445
Project	6.362**	.003	4.657*	.012	19.507**	.000	12.089**	.000	3.114*	.050
SxP	.101	.904	.210	.811	.309	.735	.422	.657	1.361	.262
TxP	5.952**	.004	3.664*	.030	2.608	.080	1.443	.242	1.142	.324
SxTxP	.675	.512	.178	.837	.751	.475	.338	.714	1.063	.350

NOTE: All seven premeasures were used as covariates. Significant differences favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 2. Denominator degrees of freedom equal 79.

Table 6:40 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	1.715	.194	2.286	.135	1.403	.240	.532	.468	2.355	.129
Treatment	1.591	.211	3.977n	.050	1.371	.245	4.850b	.031	5.104n	.027
SxT	.035	.852	.922	.340	1.067	.305	.831	.365	.547	.462
Project	6.249**	.003	15.630**	.000	10.500**	.000	9.010**	.000	21.624**	.000
SxP	.493	.613	.072	.931	.229	.796	.266	.767	.157	.855
TxP	2.548	.085	5.908**	.004	1.666	.196	2.560	.084	2.723	.072
SxTxP	.153	.858	.034	.967	.425	.655	.661	.519	1.394	.254

NOTE: All seven premeasures were used as covariates. Significant differences favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1) except for all effects involving project in which case numerator degrees of freedom equal 2. Denominator degrees of freedom equal 79.

Table 6:41

Across Project Means on Stanford Measures

for Basal vs Linguistic by Sex

Sex	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted										
Male	19.140	17.774	17.170	28.031	21.156	10.266	12.061	35.200	34.753	37.507
Female	20.149	18.510	19.197	30.631	21.207	11.627	13.873	37.383	36.367	39.012
Adjusted (7 covariates)										
Male	19.415	17.808	17.425	28.355	21.305	10.541	12.462	35.821	35.149	37.573
Female	19.885	18.477	18.952	30.319	21.064	11.363	13.488	36.787	35.987	38.949

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:42

Within Projects Analysis of Covariance on Stanford Measures for Basal vs Linguistic Treatments (7 covariates)

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
	Sex	.336	.563	.000	.985	1.946	.167	1.942	.167	.154	.696
Ruddell	Trt	10.176N	.002	3.145	.080	1.846	.178	.169	.682	.072	.789
	SxT	1.129	.291	.586	.446	1.098	.298	.202	.654	1.518	.222
	Sex	.346	.558	1.084	.301	2.366	.128	1.828	.180	.571	.452
Schneyer	Trt	.724	.397	.510	.477	2.319	.132	.189	.665	5.478b	.022
	SxT	.344	.559	.037	.847	1.421	.237	1.216	.273	.094	.760
	Sex	.108	.743	.221	.640	1.145	.288	.637	.427	1.702	.196
Sheldon	Trt	5.956n	.017	7.078N	.009	3.874	.053	3.398	.069	5.276b	.024
	SxT	.205	.652	.421	.518	.104	.748	.015	.902	1.591	.211

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 79. All seven premeasures used as covariates.

Table 6:42 (continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Ruddell	Sex	2.043	.157	.056	.813	.011	.917	.297	.587	.005	.944
	Trt	2.754	.101	4.221n	.043	1.528	.220	.263	.609	3.345	.071
	SxT	.404	.527	.411	5.23	1.590	.211	1.976	.164	1.186	.279
Schneyer	Sex	.404	.527	.776	.381	1.513	.222	.002	.964	1.009	.318
	Trt	2.298	.134	.363	.549	2.453	.121	5.569b	.021	.305	.582
	SxT	.112	.739	.468	.496	.612	.436	.308	.581	1.598	.210
Sheldon	Sex	.390	.534	2.045	.157	.336	.564	.879	.351	2.068	.154
	Trt	1.252	.267	14.583N	.000	.622	.433	.800	.374	11.950N	.001
	SxT	.002	.962	.248	.620	.051	.822	.003	.957	.696	.407

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator 79. All seven premeasures used as covariates.

the other two projects. Significant treatment differences on the second grade spelling test favored the Linguistic approach in two of the three projects. No difference between treatments on the spelling test was found for the other project. Table 6:42 also reveals that the infrequent significant treatment differences generally favored the Linguistic group in two projects but the Basal pupils in the third project.

The explanation for the treatment by project interaction on the word recognition test can be found in Table 6:43. This table reports the unadjusted and adjusted means on each of the achievement variables for each of the three projects. The adjusted means for the word recognition variable indicate that the Linguistic treatment resulted in higher word recognition skills for two projects but the reverse was true in the other project. The explanation for the treatment by project interaction on the second grade spelling variable is also evident. In the first project the Linguistic group was superior, in the second project slight differences favored the Basal treatment, and in the third project the Linguistic pupils were significantly better spellers.

There was evidence of similar treatment by project interactions on the paragraph meaning, word study skills, and language subtests, although none of these reached statistical significance. It is evident that the two treatments operated differently from project to project, perhaps because the Linguistic materials were quite different in the various projects.

Other tables pertinent to the within projects analysis are included in the appendix.

Subsample for Linguistic versus Basal

Information about the pupils comprising the sample for the individual measures is provided in Table 6:44. Each of the pupils in the subsample was administered individually the Gilmore Oral Reading Test, the Fry Word List, and the Gates Word List. An analysis of variance was conducted to determine whether or not the Linguistic and Basal subsamples differed significantly in their readiness for reading. The results of this analysis are presented in Table 6:45. Only one significant difference was found, that favoring the Basal treatment on the Metropolitan Listening Test. An analysis of covariance, utilizing all seven premeasures as covariates, is reported in Table 6:46. No treatment by project interactions were found to be significant. Therefore, the treatments appeared to operate in the same fashion across projects. No differences were found between treatments in reading rate or reading accuracy as measured by the Gilmore Oral Reading Test. However, significant differences favoring the Linguistic treatment were found in performance on the Fry Word List and the Gates Word List. Linguistic pupils recognized a significantly greater number of words in isolation after the second year of instruction. Treatment means are reported in Table 6:47.

Table 6:43

Within Projects Means on Stanford Measures

for Basal vs Linguistic Comparison by Treatment

Project	Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Ruddell	Unadjusted										
	Basal	18.629	17.457	17.935	30.154	20.221	9.304	11.464	33.987	37.538	36.112
	Linguistic	23.647	18.375	18.392	27.330	20.550	11.330	13.215	35.170	32.210	36.253
	Adjusted (7 covariates)										
	Basal	18.334	16.281	16.064	28.012	19.675	8.461	9.778	32.301	35.458	34.010
	Linguistic	23.491**	19.576	18.636	29.169	20.071	11.201	13.447*	34.953	33.907	38.325
Schneyer	Unadjusted										
	Basal	18.420	16.724	17.974	27.087	20.425	10.651	12.204	35.238	35.049	36.784
	Linguistic	17.200	15.548	16.181	25.680	18.249	9.024	11.406	32.697	30.518	36.804
	Adjusted (7 covariates)										
	Basal	21.344	20.031	22.360	33.494	22.785*	13.198	15.969	39.685	41.144*	42.117
	Linguistic	20.603	19.303	20.795	32.797	20.944	11.858	15.379	37.870	37.368	42.777
Sheldon	Unadjusted										
	Basal	21.708	20.590	23.605	34.547	26.434	14.747	13.570	42.862	41.081	40.602
	Linguistic	21.195	20.498	17.689	31.968	22.321	11.626	15.132	38.303	37.684	40.850
	Adjusted (7 covariates)										
	Basal	16.296	14.659	16.539	23.367	22.447*	10.622	7.893	35.561	30.698	31.300
	Linguistic	18.698*	17.671**	14.298	26.539	20.372	9.511	12.062**	34.547	32.369	36.288**

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:44

Subjects Used for the Analysis of Subsample Measures for the Basal vs Linguistic Treatments

Project	Treatment	Males	Females	Total
Ruddell	Basal	12	8	20
	Linguistic	11	6	17
Schneyer	Basal	21	23	44
	Linguistic	19	26	45
Sheldon	Basal	23	26	49
	Linguistic	42	53	95

Table 6:45

Across Projects Analysis of Variance on Premeasures for Subsample for Basal vs Linguistic Treatments

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	2.928	.088	3.832	.051	.261	.610	1.367	.243	2.144	.144	3.621	.058	4.066f	.045
Treatment	.671	.413	.081	.776	.962	.328	.189	.664	.946	.332	5.220b	.023	.055	.815
SxT	.362	.548	.077	.781	.903	.343	.623	.431	.008	.928	.911	.341	.350	.554
Project	34.292**	.000	7.559**	.001	14.788**	.000	2.917	.056	19.246**	.000	12.024**	.000	31.939**	.000
SxP	.839	.434	.662	.517	.081	.922	2.013	.136	3.363*	.036	.467	.627	.743	.477
TxP	5.758**	.004	4.360*	.014	.667	.514	2.596	.077	1.570	.210	.088	.916	.695	.500
SxTxP	.020	.980	.819	.442	.680	.507	.537	.585	.979	.377	.352	.704	1.336	.265

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Degrees of freedom are 1 and 258, except for effects involving project in which case d.f. are 2 and 258.

Table 6:46

Across Projects Analysis of Covariance on Subsample Measures for Basal vs Linguistic Comparison (7 covariates)

Effect	Gilmore Accuracy		Gilmore Rate		Fry Word List		Gates Word List	
	F	P	F	P	F	P	F	P
Sex	4.299f	.039	.065	.800	.832	.363	1.111	.293
Treatment	.554	.457	3.430	.065	3.943n	.048	8.175N	.005
SxT	.028	.866	.358	.550	.052	.819	.001	.969
Project	16.925**	.000	.696	.500	3.986*	.020	1.301	.274
SxP	1.211	.300	.098	.907	3.409*	.035	2.405	.092
TxP	1.377	.254	2.699	.069	2.947	.054	2.076	.128
SxTxP	1.352	.261	.866	.422	2.281	.104	1.710	.183

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .0I level of significance; lower case letter; .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal 1; denominator, 251, except for effects involfing project in which case degrees of freedom equal 2 and 251.

Table 6:47

Means on Subsample Measures for Basal vs Linguistic Comparison

Treatment	Gilmore Accuracy	Gilmore Rate	Fry Word List	Gates Word List
Unadjusted				
Basal	38.681	85.752	22.965	24.159
Linguistic	36.745	95.408	23.924	26.656
Adjusted (7 covariates)				
Basal	38.142	85.088	22.552	23.562
Linguistic	37.134	95.886	24.220*	27.086**

* indicates significance at .05 level
** indicates significance at .01 level

Summary of Basal versus Linguistic Comparison

The Linguistic and Basal treatments operated in a different fashion from project to project. In general, Linguistic pupils were somewhat better in the skills of word recognition and spelling but this finding was by no means unequivocal. No differences were found in reading comprehension. Basal pupils were generally superior in word study skills, an unusual finding in light of the slight superiority of Linguistic pupils in spelling and word recognition.

Basal versus Phonic/Linguistic Comparison

The relative effectiveness of the Phonic/Linguistic program published by the Lippincott Company was assessed by comparing the achievement of pupils in this program with the achievement of pupils who used Basal reading programs in the same project. Table 6:48 indicates that the particular program utilized for the Basal treatment was the same in each of the two projects. Only two projects used both Basal and Phonic/Linguistic materials during the second grade phase of the project although three had been involved in the Basal versus Phonic/Linguistic comparison during the first grade phase of the study. Second grade data were not collected in one of the three projects.

The number of pupils enrolled in each of the treatments within each of the two projects is indicated in Table 6:48. Considerably fewer students comprised the second grade population in each of the two studies. Moreover, all pupils in two of the five first grade classes in one project were lost. The number of classes and individuals involved in the Basal versus Phonic/Linguistic comparison is considerably smaller than the number of pupils involved in other basal versus non-basal comparisons.

A comparison was made of the first grade achievement of those pupils who persisted in the study through grade two and those pupils who dropped out after grade one. This information is reported in Table 6:49. The persists were significantly superior to the non-persists on all five measures of first grade achievement in each of the two projects. Therefore, the second grade sample is somewhat superior in scholastic achievement to the sample utilized in the first grade phase of the study. However, none of the treatment by status interactions (persists versus non-persists) were significant. The means for the dropouts and persists for each treatment within each project are reported in Table 6:50. In general, the same relationship existed between mean achievement of Phonic/Linguistic and Basal pupils in the dropout and persist categories. However, there is a tendency in the first project for Basal non-persists to be equal to or superior to Phonic/Linguistic non-persists, while Basal persists are quite inferior to Phonic/Linguistic persists in first grade achievement. This somewhat non-representative relation should be considered in interpreting the findings.

Table 6:48

Materials and Numbers of Classes and Pupils for Basal vs Phonic/Linguistic

	Hayes				Tanyzer			
	Classes		Pupils		Classes		Pupils	
	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade	First Grade	Second Grade
Numbers								
Basal	5	3	86	48	9	9	219	167
Phonic/Linguistic	5	5	97	75	8	8	177	151
Materials								
Basal	Scott-Foresman				Scott-Foresman			

Table 6:49

Within Projects Analysis of Variance on Stanford Measures for Basal vs Phonic/Linguistic Treatments (Dropouts vs Persists)

Project	Effect	Word Recognition		Paragraph Meaning		Vocabulary		Spelling		Word Study Skills	
		F	P	F	P	F	P	F	P	F	P
Hayes	Status	84.078P	.000	74.551P	.000	34.814P	.000	85.649P	.000	81.022P	.000
	TrtxSt	2.688	.102	1.031	.310	2.748	.098	.583	.445	1.912	.167
Tanyzer	Status	5.919p	.015	4.111p	.043	6.683p	.010	7.801P	.005	14.120P	.000
	TrtxSt	.482	.488	.003	.959	.150	.698	.014	.905	1.191	.276

NOTE: Significant status difference favoring non-persists indicated by N or n; persists by P or p. Capital letter in each case designates .01 level of significance; lower case letter, .05 level of significance. One asterisk indicates interaction significant at .05 level; two asterisks, .01 level.

Table 6:50

Unadjusted Cell Means on Stanford Measures for Dropouts and Persists for Basal vs Phonic/Linguistic Treatments

Project	Status	Treatment	No. of Observ.	Word Reading	Paragraph Meaning	Vocabulary	Spelling	Word Study Skills
Hayes	Dropouts	Basal	34	13.273	12.000	19.485	4.182	27.000
		P/L	22	15.682	11.500	15.591	5.182	26.273
	Persists	Basal	52	21.769	23.962	23.846	12.135	38.789
		P/L	75	27.827	26.627	23.267	14.560	42.293
Tanyzer	Dropouts	Basal	48	16.438	14.229	19.313	8.813	31.417
		P/L	26	24.385	21.192	22.577	12.577	37.000
	Persists	Basal	171	18.099	16.667	21.111	10.795	34.930
		P/L	151	27.305	23.762	25.007	14.742	43.232

An across projects analysis of variance was conducted on the pre-measures to determine whether or not the Basal and Phonic/Linguistic treatments differed significantly in readiness for reading. Table 6:51 reveals that the Phonic/Linguistic pupils were superior in performance on the phonemes test and on the identical forms test. No differences were found between treatments on the five other readiness measures. The means for each treatment on each variable are presented in Table 6:52. The two treatments are very similar in letter names, learning rate, word meaning, listening, and intelligence. Since the two groups are so much alike in readiness for reading, the use of readiness measures as covariates in a covariance analysis might be expected to yield results very similar to those obtained in a simple analysis of variance technique.

The first line of Table 6:51 indicates that girls were significantly superior in performance on the letter names, learning rate, identical forms, and intelligence tests. This finding follows the general trend which shows girls to be superior in readiness for reading. However, no sex by treatment interactions were found. The actual means according to sex are recorded in Table 6:53. Girls were superior in terms of actual mean achievement on six of the seven readiness measures, although only two of these differences were statistically significant. Boys were somewhat superior on the word meaning test.

The results of the analysis of variance on the Stanford Achievement measures are recorded in Table 6:54. Mean performance on both first grade and second grade achievement measures was evaluated. A somewhat unusual finding was that no significant project differences in achievement were noted. This finding runs counter to the general finding in most of the basal versus non-basal comparisons. However, only two projects were involved in this particular comparison. The first line of the table reveals that sex differences were found in achievement on the paragraph meaning test at both testing points. Girls were superior to boys in reading comprehension at the end of the first and second grade. Sex differences favoring girls were also found in spelling achievement at the end of both the first and second grades. Girls were also found to be superior in performance on the language subtest at the end of the second grade. Mean achievement for the two sexes on each of the measures is reported in Table 6:55. The first two lines of the table report the means pertinent to this discussion. In actual performance girls were superior on each of the achievement measures at each of the two testing points although in many cases the differences were not statistically significant.

Significant treatment by project interactions were found for the second grade measures of word recognition, paragraph meaning, and language. As a result, treatment differences across projects for these variables could not be interpreted unambiguously. Therefore, only the

Table 6:51

Across Projects Analysis of Premeasures

for Basal vs Phonic/Linguistic Comparison

Effect	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
	F	P	F	P	F	P	F	P	F	P	F	P	F	P
Sex	2.928	.095	10.111F	.003	5.779f	.021	5.769f	.021	1.266	.267	3.618	.064	7.432F	.009
Treatment	7.895N	.008	.227	.636	2.641	.112	11.033N	.002	.233	.632	2.946	.094	.000	.987
SxT	.190	.665	.308	.582	.958	.333	2.184	.147	.104	.749	.416	.522	.635	.430
Project	56.883**	.000	79.917**	.000	39.290**	.000	23.206**	.000	53.774**	.000	31.369**	.000	20.549**	.000
SxP	.363	.550	.057	.812	.498	.484	2.490	.122	.504	.482	.025	.875	.449	.507
TxP	13.060**	.001	14.313**	.000	3.410	.072	27.011**	.000	23.536**	.000	1.784	.189	11.307**	.002
SxTxP	.606	.441	.384	.539	.018	.892	.972	.330	.174	.679	.155	.696	.320	.575

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter; .05 level. One asterisk indicates .05 level of significance; two asterisks; .01 level. Numerator degrees of freedom equal one (1); denominator, 41.

Table 6:52

Means on Premeasures

for Basal vs Phonic/Linguistic Treatments

Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Basal	23.208	35.393	10.361	13.133	8.826	9.408	38.467
Phonic/Linguistic	28.051 **	34.550	11.089	14.918 **	8.691	8.942	38.388

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:53

Across Project Means on Premeasures on Basal vs Phonic/Linguistic by Sex

Sex	Phonemes	Letter Names	Learning Rate	Identical Forms	Word Meaning	Listening	I.Q.
Male	24.255	32.440	10.181	13.412	8.924	8.904	36.967
Female	27.240	37.350 **	11.291 *	14.722 *	8.592	9.407	39.825 **

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:54

Across Projects Analysis of Variance on Stanford Measures for Basal vs Phonic/Linguistic Comparison

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	3.277	.078	2.392	.130	6.709f	.013	7.159f	.011	.004	.949
Treatment	54.910N	.000	22.733N	.000	15.007N	.000	11.251N	.002	4.175n	.047
SxT	.001	.979	.179	.674	.001	.981	.065	.800	.072	.790
Project	1.957	.169	2.096	.155	7.183*	.011	.512	.478	.001	.975
SxP	.010	.754	.014	.906	.078	.781	.563	.457	.028	.867
TxP	4.746*	.035	9.430**	.004	5.025*	.030	9.876**	.003	8.512**	.006
SxTxP	.110	.716	.445	.509	.178	.675	.087	.778	.250	.618

NOTE: Significant differences favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1). Denominator degrees of freedom equal 41.

Table 6:54 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	4.771f	.035	7.190f	.011	3.045	.088	2.256	.141	6.265f	.016
Treatment	11.461N	.002	17.523N	.000	21.625N	.000	12.055N	.001	4.864	.033
SxT	.030	.863	.096	.758	.063	.803	.283	.597	.001	.972
Project	.087	.770	.743	.394	.502	.483	1.318	.258	1.927	.173
SxP	.016	.901	.099	.755	.922	.342	.321	.574	.616	.437
TxP	2.283	.139	2.583	.116	5.866*	.020	.214	.646	9.379**	.004
SxTxP	.129	.721	.105	.747	.038	.847	.134	.716	.445	.509

NOTE: Significant differences favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1). Denominator degrees of freedom equal 41.

Table 6:55

Across Projects Means on Stanford Measures

on Basal vs Phonic/Linguistic by Sex

Sex	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted Male	22.481	20.254	19.930	32.276	22.911	11.969	15.096	38.380	39.110	39.373
Female	24.442	21.438	23.858*	36.225*	22.976	14.025*	17.949*	40.781	41.981	43.389*
Adjusted (7 covariates) Male	23.620	20.893	21.603	33.564	23.993*	12.947	16.087	39.410	40.958	41.716
Female	23.349	20.824	22.252	34.988	21.938	13.086	16.998	39.792	40.205	41.139

* indicates .05 level of significance
** indicates .01 level of significance

second grade measures of spelling and word study skills can be discussed at this point of the analysis. Significant differences in achievement on both of these measures favored the Phonic/Linguistic program. The difference in mean achievement is reported in Table 6:56. Reference to the norms of the Stanford Achievement Test, Form W of the Primary Battery II, indicates that the raw score difference in second grade spelling is equivalent to approximately five months growth in terms of grade scores. Mean achievement for the Basal and Phonic/Linguistic pupils on the word study skills is equivalent to grade scores of 2.9 and 3.6 or a difference of approximately seven months in achievement on this test.

To analyze differences between treatments on the word recognition, paragraph meaning, and language subtests of the Stanford Achievement Test, Primary Battery II, an analysis of covariance across projects was conducted. It was hoped that the covariance analysis, using all seven premeasures as covariates, would erase the project by treatment interactions found in the analysis of variance. The results of this covariance analysis are summarized in Table 6:57. None of the project by treatment interactions was now significant. Adjusting statistically for differences in readiness for reading had the desired results of erasing these interactions and making possible an interpretation of the analysis of treatment differences for the word recognition, paragraph meaning, and language subtests. Again the Phonic/Linguistic treatment was superior in achievement on each of these measures after two years of instruction. The extent of the superiority is revealed in the last two lines of Table 6:56. The adjusted means show a difference favoring the Phonic/Linguistic approach of approximately 4 raw score points on the word recognition test. Reference to the norms of the Stanford Achievement Test indicate this difference to be roughly equivalent to four months growth. The raw score difference of approximately five on the paragraph meaning test is roughly equivalent to a grade score difference of .3. The mean achievement of the Basal group on the language subtest is equivalent to a grade score of 3.1 while the Phonic/Linguistic mean achievement is equivalent to a grade score of 3.7. For this particular treatment comparison differences in achievement are substantial.

The covariance analysis described in Table 6:57 indicates that no sex differences in achievement are significant after differences in achievement on the premeasures have been adjusted. This finding again supports the general conclusion that girls' superiority in reading after one or two years of instruction is related to their superiority in readiness for reading at the beginning of the first grade. When adjustments are made statistically for differences between sexes in readiness for reading, no differences in achievement are found. The similarity of adjusted means for boys and girls on the Stanford measures is indicated in the last two lines of Table 6:55.

Table 6:56

Across Projects Means on Stanford Measures

for Basal vs Phonic/Linguistic by Treatment

Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Unadjusted Basal	19.238	18.931	18.858	31.706	21.844	11.349	14.218	36.233	37.081	39.588
Phon/Ling	27.235**	22.563**	24.655**	36.577**	23.917*	14.495**	18.616**	42.588**	43.665**	43.044*
Adjusted (7 covariates) Basal	19.401	18.768	18.818	31.419	21.574	11.635	14.036	36.730	37.771	38.661
Phon/Ling	27.091**	22.707**	24.691**	36.831**	24.156*	14.241**	18.777**	42.148**	43.054*	43.865**

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:57

Across Projects Analysis of Covariance on Stanford Measures for Basal vs Phonic/Linguistic Comparison (7 covariates)

Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
	F	P	F	P	F	P	F	P	F	P
Sex	.062	.804	.008	.930	.142	.709	.896	.351	4.347m	.045
Treatment	54.401N	.000	27.178N	.000	12.674N	.001	14.199N	.001	7.189n	.011
SxT	.136	.715	.296	.590	.000	.989	.236	.630	.028	.868
Project	43.302**	.000	37.863**	.000	40.201**	.000	32.013**	.000	26.197**	.000
SxP	.009	.925	.010	.754	.001	.982	.417	.522	.082	.776
TxP	1.646	.208	.001	.978	.125	.726	.033	.857	.008	.928
SxTxP	.048	.828	.041	.841	.872	.357	.010	.922	.063	.804

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1). Denominator degrees of freedom equal 34. All seven premeasures are used as covariates.

Table 6:57 (continued)

Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
	F	P	F	P	F	P	F	P	F	P
Sex	.020	.887	.482	.492	.088	.768	.136	.715	.176	.677
Treatment	7.686N	.009	14.286N	.001	19.339N	.000	7.231n	.011	15.463N	.000
SxT	.030	.864	.291	.593	.001	.976	.047	.830	.266	.609
Project	32.781**	.000	16.128**	.000	45.274**	.000	28.921**	.000	19.152**	.000
SxP	.145	.706	.017	.897	1.135	.294	.072	.789	1.443	.238
TxP	3.035	.091	.161	.691	.546	.465	3.215	.082	1.113	.299
SxTxP	.034	.854	.474	.496	.127	.723	.030	.864	2.236	.144

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal one (1). Denominator degrees of freedom equal 34. All seven premeasures are used as covariates.

The use of the covariance analysis also resulted in significant project differences in achievement. This finding is in contrast to the findings of the analysis of variance where project differences generally were not significant.

Since in the analysis of covariance no treatment by project interactions were significant, it was not necessary to perform an analysis within projects. Nevertheless, such an analysis was conducted and results are tabled in the appendix. The treatment means for each project are reported in Table 6:58 for information. In light of the superiority of the Phonic/Linguistic treatment in the across projects analysis, it is surprising to note that Basal pupils in project one actually scored better on the second grade measures of paragraph meaning and language and performed just as well as Phonic/Linguistic pupils on the word meaning test. However, when achievement scores are adjusted for differences in readiness, the superiority of the Phonic/Linguistic treatment is again apparent. The adjusted means consistently favor Phonic/Linguistic pupils on each of the five second grade measures. The reason for this turnabout is the substantial superiority in reading readiness exhibited by the Basal pupils in project one as reported in Table 6:59. In project two the Phonic/Linguistic pupils were superior in reading readiness and the adjusted second grade achievement scores of Basal and Phonic/Linguistic pupils reflect this situation.

No analysis of the individual outcome measures(Gilmore Oral Reading Test, Gates Word List, and Fry Word List) was conducted for the Basal versus Phonic/Linguistic treatment comparison. Deviations from the prescribed format for punching data cards in one project made this analysis impossible. However. information about treatment differences in achievement on these measures can be obtained from the final reports of the projects in question.

Summary of Basal versus Phonic/Linguistic Comparison

Only two projects had in common a Basal treatment and a Phonic/Linguistic treatment. Therefore, the results are based on fewer cases than the results for the other basal versus non-basal comparisons. However, the Phonic/Linguistic treatment in the two projects studied produced superior achievement in reading, spelling, and general language ability at the end of the second grade.

Table 6:58

Within Projects Means on Stanford Measures

for Basal vs Phonic/Linguistic Comparison by Treatment

Project	Treatment	Word Recog. 1	Word Recog. 2	Parag. Meaning 1	Parag. Meaning 2	Vocab. 1	Spell. 1	Spell. 2	Word Study Skills 1	Word Study Skills 2	Language 2
Hayes	Unadjusted										
	Basal	22.603	21.993	25.177	36.782	24.628	12.857	16.473	40.070	39.602	42.322
	Phon/Ling	26.914	21.976	25.438	34.676	22.278	13.880	18.264	41.367	44.626	38.816
	Adjusted (7 covariates)										
	Basal	25.780	23.989	29.948	40.752	26.944	16.073	19.165	45.108	46.168	46.473
	Phon/Ling	34.244**	27.021*	34.788	44.289	28.712	20.205**	23.778*	50.406**	54.892**	48.440
Tanyzer	Unadjusted										
	Basal	18.015	17.851	16.628	29.914	20.862	10.816	13.422	34.879	36.191	38.624
	Phon/Ling	27.436	22.929	24.166	37.766	24.942	14.879	18.836	43.351	43.064	45.687
	Adjusted (7 covariates)										
	Basal	17.150	16.925	14.890	28.125	19.680	10.068	12.226	33.774	34.808	35.904
	Phon/Ling	22.619**	20.011*	18.380	32.170	21.308	10.514	15.651	36.986	35.655	41.005*

* indicates .05 level of significance
** indicates .01 level of significance

Table 6:59

Means for Within Projects Treatments on Premeasures
for Basal vs Phonic/Linguistic Treatments

Project	Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Metropolitan Meaning	Metropolitan Listening	Pintner-Cunningham I.Q.
Hayes	Basal	18.600	29.767**	8.843	13.645*	8.455**	8.547	37.905*
	Phon/Ling	15.809	22.135	8.695	11.592	6.452	7.762	33.265
Tanyzer	Basal	24.835	37.378	10.897	12.952	8.958	9.712	38.665
	Phon/Ling	35.703**	42.309*	12.585**	16.997**	10.090**	9.679	41.590*

* indicates .05 level of significance
** indicates .01 level of significance

The Practicality of Significant Differences

Many significant differences have been reported above for the various basal versus non-basal comparisons. Differences were regarded as being significant if they reached the .05 level of significance. However, with the large number of comparisons involved one would expect a substantial number of differences to reach statistical significance on the basis of chance alone. Furthermore, a large sample was employed in this investigation. As a result, a relatively small difference between treatments might be statistically significant. It would be of interest to know how important the statistically reliable differences reported are in a practical sense. In the discussion of the results, unadjusted and adjusted means were given for each treatment comparison. These means were based on raw scores for the various achievement tests. Therefore, it is possible to note the degree of disparity between means for the various basal versus non-basal comparisons. However, since the achievement measures were standardized tests, normative information is also available. Each of the raw scores can be translated into a grade equivalent score. It is therefore possible to judge the practical significance of the differences in terms of whether or not the mean achievement for each group would result in similar grade equivalents. Perhaps, two groups could obtain a grade equivalent score of 2.9, even though a statistically significant difference had been obtained in comparing the achievement means. Relevant information concerning the grade equivalents for various raw scores on each of the Stanford Tests is reported in Table 6:60.

Limitations

There are a number of limitations involved in interpreting the findings of the analysis of methodology. A major limitation is that not all treatments were represented in all projects, and as a result it was not feasible to make direct comparisons between such treatments as I.T.A. and Linguistic, Language Experience and Phonic/Linguistic, or any other combination of innovative programs. The extreme project differences in achievement would have made comparisons between treatments found in different projects meaningless. As a result, it was possible only to compare the various innovative treatments with the basal treatment in each project. Of course, the comparisons between certain innovative treatments have been made and reported in the reports of the individual projects.

Another major limitation is that treatments labeled Linguistic, Basal, and I.T.A. did not follow exactly the same program in each project. The basal reader approach was considered a single treatment even though a variety of programs were used in the various projects.

Table 6:60

Grade Equivalents for Stanford Achievement Test Primary II Battery, Form W

Word Meaning		Paragraph Meaning		Spelling		Word Study Skills		Language	
No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score
1	1.2	1	1.0	1	1.3	1	Below 1.0	1	Below 1.0
2	1.3	2	1.1	2	1.5	2		2	
3	1.4	3	1.2	3	1.7	3		3	
4	1.5	4	1.3	4	1.9	4		4	1.0
5	1.6	5	1.4	5	2.0	5		5	1.0
6	1.7	6	1.5	6	2.2	6	1.0	6	1.0
7	1.7	7	1.5	7	2.3	7	1.0	7	1.1
8	1.8	8	1.6	8	2.4	8	1.0	8	1.1
9	1.8	9	1.6	9	2.5	9	1.0	9	1.2
10	1.9	10	1.7	10	2.6	10	1.1	10	1.2
11	2.0	11	1.7	11	2.8	11	1.1	11	1.3
12	2.1	12	1.7	12	2.9	12	1.2	12	1.3
13	2.3	13	1.8	13	3.0	13	1.2	13	1.4
14	2.5	14	1.8	14	3.1	14	1.3	14	1.4
15	2.6	15	1.9	15	3.2	15	1.3	15	1.5
16	2.7	16	1.9	16	3.3	16	1.4	16	1.5
17	2.7	17	2.0	17	3.4	17	1.4	17	1.6
18	2.8	18	2.0	18	3.5	18	1.5	18	1.6
19	2.9	19	2.1	19	3.6	19	1.5	19	1.7
20	3.0	20	2.1	20	3.7	20	1.6	20	1.7
21	3.1	21	2.2	21	3.8	21	1.6	21	1.8
22	3.2	22	2.3	22	3.9	22	1.7	22	1.9
23	3.3	23	2.4	23	4.0	23	1.7	23	1.9
24	3.5	24	2.4	24	4.2	24	1.8	24	2.0
25	3.6	25	2.5	25	4.4	25	1.9	25	2.1
26	3.7	26	2.5	26	4.6	26	2.0	26	2.1
27	3.8	27	2.6	27	4.8	27	2.0	27	2.2
28	4.0	28	2.6	28	5.2	28	2.1	28	2.2
29	4.2	29	2.7	29	5.7	29	2.2	29	2.3
30	4.4	30	2.8	30	6.3	30	2.3	30	2.4

Table 6:60 (continued)

Word Meaning		Paragraph Meaning		Spelling		Word Study Skills		Language	
No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score	No. Right	Grade Score
31	4.7	31	2.9			31	2.4	31	2.5
32	5.1	32	2.9			32	2.4	32	2.5
33	5.7	33	3.0			33	2.5	33	2.6
34	6.4	34	3.0			34	2.6	34	2.7
35	6.9	35	3.1			35	2.7	35	2.8
36	7.5+	36	3.1			36	2.8	36	2.9
		37	3.2			37	2.9	37	3.0
		38	3.3			38	3.0	38	3.1
		39	3.4			39	3.1	39	3.1
		40	3.5			40	3.3	40	3.2
		41	3.6			41	3.4	41	3.3
		42	3.7			42	3.5	42	3.4
		43	3.9			43	3.6	43	3.6
		44	4.0			44	3.7	44	3.7
		45	4.1			45	3.9	45	3.8
		46	4.2			46	4.0	46	3.9
		47	4.3			47	4.2	47	4.1
		48	4.4			48	4.5	48	4.2
		49	4.6			49	4.8	49	4.4
		50	4.8			50	5.0	50	4.5
		51	5.0			51	5.2	51	4.6
		52	5.3			52	5.4	52	4.8
		53	5.5			53	4.6	53	4.9
		54	5.7			54	5.8	54	5.0
		55	6.0			55	6.0	55	5.1
		56	6.4			56	6.3	56	5.2
		57	6.9			57	6.5	57	5.4
		58	7.5+			58	6.7	58	5.6
		59				59	7.0	59	5.8
		60				60	7.2	60	6.0
						61	7.4	61	6.2
						62	7.5+	62	6.4
						63		63	6.6
						64		64	6.8
								65	7.0
								66	7.2
								67	7.5
								68	7.5+

Furthermore, materials within the Linguistic and I.T.A. categories also differed from one investigation to another. The presence or absence of significant treatment differences between a given basal and non-basal program within a project may have been a result of the specific materials used in that project. It would be unusual indeed if all Basal, I.T.A., or Linguistic programs were equally effective. Furthermore, the Language Experience approach was not exactly the same instructional program in the projects which utilized this treatment. The arbitrary grouping of programs and materials should not disguise the fact that differences existed in instructional programs given the same label.

Still another problem is involved in interpreting the findings concerning transitional programs such as the Initial Teaching Alphabet. Ordinarily pupils make the transition from I.T.A. to traditional orthography in late first grade or early second grade. Instruction for these pupils then goes in many different directions including placement in basal readers, language experience approaches, or individualized reading programs. Therefore, when evaluation of reading ability takes place at the end of the second grade, the typical I.T.A. pupil has had nearly as much instruction in some program utilizing traditional orthography as he has had in the Initial Teaching Alphabet. In this investigation achievement of I.T.A. pupils was compared with achievement in Basal programs. In cases where differences were found, the question remains as to how much of the I.T.A. pupils' achievement at the end of the second grade is a function of his initial instruction in I.T.A. and how much is a function of his later instruction in some other type of program. Similar problems exist with certain of the Linguistic programs.

It should also be emphasized that evaluation of the various programs has been carried out only through the second grade. Terminal reading ability cannot necessarily be predicted on the basis of reading achievement after two years. The possibility exists that programs which appear to be superior in terms of achievement in the first grade and second grade may lose that superiority in terms of reading ability in later years. It is even possible that programs which appear superior after the second grade actually turn out to be less than adequate programs by the end of sixth grade. Generalizing about the effectiveness of the programs must take into account the fact that the analysis to date has considered only a relatively small segment of the developmental reading program for elementary school pupils.

A limitation of most studies of this nature is that it is much more difficult to measure attitudinal aspects of reading than the more mechanical aspects of the reading act. Reading ability in this study has been evaluated in terms of ability to recognize words, ability to comprehend short paragraphs, and ability to read with speed and accuracy. Standardized tests are available to measure these outcomes. However, the argument could be advanced that a more important outcome of any reading program is the engendering in pupils of a desire to read. Although measures of reading interest were collected by the project directors and are recorded in the individual reports of the projects, no analysis was made of interest and attitude in the evaluation of reading achievement reported in this volume. Problems of reliability and validity with respect to attitude measures make it very difficult at the primary level to analyze these aspects of reading achievement.

The analysis of methodology in this report involved comparing Basal and innovative programs used in the same project. The very nature of this analysis makes it appear likely that the newer innovative programs profited from whatever "Hawthorne effect" was operating in any project. It is likely that pupil awareness of experimentation, parental interest, and teacher enthusiasm are more likely to be associated with novel programs. Although efforts were made in the various projects to make all programs equally novel and interesting, it is unlikely that Basal programs were regarded with the same degree of inquiry as were the innovative programs.

In some instances there is a problem arising from non-representative retention. For some reason, non-persist pupils in one treatment were better achievers in first grade than were non-persist pupils in the other treatment while the reverse was true for pupils who persisted. This non-representative retention may be a factor influencing the results. Furthermore, in almost every instance, the pupils who persisted through the second grade were significantly superior in first grade achievement than were pupils lost during the second grade phase of the study. Therefore, pupils on whom results are reported in this study are superior to pupils from the participating projects in general. The generalizability of the findings is therefore limited.

Chapter VII

RELATIVE INFLUENCE OF TREATMENT AND PROJECT

The analysis described in this chapter was designed to assess the relative influence of project and method on mean achievement of pupils. Information was sought concerning whether the project in which a child learns to read or the instructional program utilized is more important in determining his reading ability at the end of the second grade. The purpose of this analysis was to rank each of the programs (Basal approaches, Linguistic programs, Phonic/Linguistic programs, Language Experience approaches, and Initial Teaching Alphabet programs), considering each program within each project to be a separate treatment. For this section of the analysis, the same ten projects were used which were utilized in the main analysis described in Chapter VI. Since each of the ten projects had a Basal program as one of its treatments, ten Basal treatments are utilized in this phase of the investigation. Each of these Basal programs is considered a separate treatment. In addition, this phase of the analysis used five I.T.A. treatments, three Language Experience treatments, two Phonic/Linguistic treatments, and three Linguistic treatments. Therefore a total of twenty-three separate treatments in ten projects were ranked in terms of mean pupil performance on the Word Meaning and Paragraph Meaning subtests from the Stanford Achievement Test, Primary Battery II.

This phase of the investigation utilized individuals as the experimental unit. The first step was to calculate mean performance on the Pintner-Cunningham Primary Test and second grade reading measures for each treatment within each project. These twenty-three means were then ranked in terms of performance on the test. The means differ slightly from the means reported for each treatment within each project in the main analysis (described in Chapter VI) for two reasons. First, individuals are used as the experimental unit in this analysis while class means computed separately for boys and girls were used as experimental units in the major analysis. Second, in this analysis all pupils on whom complete data were obtained for both the first and second grade comprised the sample. In the main analysis, class means based on four or fewer boys or girls within a class were eliminated for reasons described in Chapter IV. As a result, in many instances the class means calculated for the analysis described in this chapter are based on a slightly larger number of cases. Nevertheless, mean achievement in this phase of the investigation and in the major phase of the analysis differ very little.

The next step in this phase of the investigation was an analysis of covariance using each of the seven premeasures (Pintner-Cunningham

Intelligence, Murphy-Durrell Phonemes, Murphy-Durrell Letter Names, Murphy-Durrell Learning Rate, Thurstone-Jeffrey Identical Forms, Metropolitan Meaning, and Metropolitan Listening) as covariates. The covariance analysis was designed to adjust achievement scores for treatment differences in readiness for reading. Again, the twenty-three adjusted mean scores were ranked in terms of pupil achievement on the Word Meaning and Paragraph Meaning tests.

The distributions of adjusted treatment means were studied to determine the relative position of the various instructional programs and the relative ranking of projects after pupil differences in readiness were adjusted statistically. Interest was focused on whether instructional method or project was the more important factor in determining the success or lack of success of a particular treatment within a particular project. If a specific treatment (such as a Basal reading program) produced relatively superior readers regardless of the project in which it was included, this would tend to point up the importance of method. If, on the other hand, all of the treatments within a particular project were relatively successful or unsuccessful, this would tend to point up the importance of project or school system rather than method.

Treatments Ranked on Mean Intelligence

Mean performance on the Pintner-Cunningham Primary Test (administered at the beginning of first grade) for each of the twenty-three individual treatments is reported in Table 7:01. Mean raw scores ranged from 31.3 to 42.4, corresponding roughly to mental ages of 5-5 and 6-7. The projects varied widely in pupil readiness for reading as measured by this intelligence test.

The variable intelligence of pupils among the various projects and treatments should be considered in interpreting the rank-ordered mean scores on the word meaning and paragraph meaning subtests. Assuming that the Pintner-Cunningham Primary Test is a valid measure of intelligence and assuming that intelligence is positively related to reading achievement, it would not be reasonable to expect the same achievement from the pupils in project G that would be expected from pupils in project E.

The discussion of treatment differences which follows will give first mean achievement ignoring these obvious treatment differences in intelligence. A second table will give mean scores adjusted statistically for treatment differences in intelligence and in six other measures of reading readiness.

Table 7:01

Mean Pintner-Cunningham Primary Test Scores
for the Individual Basal, I.T.A., Language Experience,
Linguistic and Phonic/Linguistic Treatments

Rank	Raw Score	N	Project	Treatment
1	42.4	108	H	Basal
2	42.2	172	E	I.T.A.
3	41.5	223	E	Basal
4	41.4	151	J	Phon/Ling
5	41.1	183	C	Lang Expr
6	41.0	87	B	Basal
7	40.8	207	J	I.T.A.
8	40.2	174	C	I.T.A.
9	39.9	190	C	Basal
10	39.5	249	H	Linguistic
11	38.6	77	F	Basal
12	38.5	171	J	Basal
13	38.3	212	A	Basal
13	38.3	104	B	I.T.A.
15	36.9	170	A	Lang Expr
16	36.8	199	I	Lang Expr
17	36.5	181	I	Basal
18	36.3	52	D	Basal
19	36.2	63	F	Linguistic
20	34.0	75	D	Phon/Ling
21	33.9	82	D	I.T.A.
22	32.1	222	G	Basal
23	31.3	260	G	Linguistic

Treatments Ranked on Mean Word Recognition Score

The twenty-three individual treatments are ranked in terms of second grade performance on the word meaning subtest of the Stanford Achievement Test, Primary Battery II in Table 7:02. This table reports ranks for each of the treatments, mean raw score achievement for each treatment and the grade equivalent for each treatment. The table also reports for each of the treatments the nature of the methodology and the project in which the treatment appears. Each of the ten projects is represented by a capital letter. Project names are not given as the purpose of this analysis was not to evaluate the relative effectiveness of projects but to compare the relative influence of methodology and projects in pupil achievement.

Table 7:02 reveals that in terms of achievement (without considering differences among treatments and projects in pupil readiness for reading) method rankings can be summarized as follows:

1. The Phonic/Linguistic program ranked first and second in terms of absolute achievement.
2. I.T.A. programs in the five projects ranked third, fifth, seventh, eleventh, and fourteenth.
3. Language Experience programs ranked third, seventh, and twentieth.
4. Linguistic programs ranked thirteenth, seventeenth, and twentieth.
5. Basal programs ranged from sixth through twenty-third.

An analysis of the rankings from the standpoint of project influence reveals the following:

1. Project A ranked third and sixth.
2. Project B ranked seventh and twelfth.
3. Project C ranked seventh, fourteenth, and sixteenth.
4. Project D ranked second, fifth, and ninth.
5. Project E ranked eleventh and fifteenth.
6. Project F ranked seventeenth and eighteenth.
7. Project G ranked nineteenth and twenty-second.
8. Project H ranked tenth and thirteenth.
9. Project I ranked twentieth and twenty-third.
10. Project J ranked first, third, and twentieth.

It should be emphasized again that the rankings discussed above do not take into account differences among treatments and projects in pupil readiness for reading. However, it is interesting to note that the mean achievement of pupils in the various projects is not directly related to the intelligence of the pupils. For example, each of the three treatments from project D ranked relatively high in achievement even though these same treatments ranked relatively low in ability as reported in Table 7:01.

Table 7:02

Unadjusted Word Meaning Scores for Each Basal, I.T.A. Language Experience, Linguistic, and Phonic/Linguistic Treatment

Rank	Raw Score	Grade Score	Project	Treatment
1	22.8	3.3	J	Phon/Ling
2	22.6	3.3	D	Phon/Ling
3	22.4	3.2	J	I.T.A.
3	22.4	3.2	A	Lang Expr
5	22.2	3.2	D	I.T.A.
6	22.0	3.2	A	Basal
7	21.3	3.1	B	I.T.A.
7	21.3	3.1	C	Lang Expr
9	21.1	3.1	D	Basal
10	20.6	3.1	H	Basal
11	20.5	3.1	E	I.T.A.
12	20.4	3.0	B	Basal
13	20.1	3.0	H	Linguistic
14	20.0	3.0	C	I.T.A.
15	19.6	3.0	E	Basal
16	19.5	3.0	C	Basal
17	18.9	2.9	F	Linguistic
18	18.3	2.8	F	Basal
19	18.1	2.8	G	Basal
20	17.9	2.8	I	Lang Expr
20	17.9	2.8	J	Basal
22	16.4	2.7	G	Linguistic
23	16.3	2.7	I	Basal

The adjusted word recognition scores and corresponding grade equivalents are presented in Table 7:03. The scores in this table are adjusted for differences in pupil readiness for reading. Adjusting for differences in reading readiness increased the variability among the twenty-three treatments represented. The grade equivalents range from 2.7 to 3.8 as compared with a range of 2.7 to 3.3 among the unadjusted scores.

A study of the ranks among treatments reveals that:

1. The Phonic/Linguistic treatment ranked first and twelfth. Adjusting achievement scores for differences in pupil readiness resulted in lowering considerably the rank of one of the two Phonic/Linguistic treatments.
2. The five I.T.A. treatments ranked second, fifth, seventh, sixteenth, and nineteenth. Corresponding grade equivalents ranged from 2.9 to 3.6 even though adjustments were made for differences in readiness.
3. The three Language Experience treatments ranked fourth, tenth, and twelfth.
4. The three Linguistic treatments ranked fourteenth, fourteenth, and seventeenth.
5. The ten Basal treatments ranked third, sixth, eighth, ninth, tenth, eighteenth, twentieth, twenty-first, twenty-second, and twenty-third. The same basal series used in four different projects ranked third, sixth, ninth, and twenty-second.

The only treatment that resulted in similar achievement from project to project was the Linguistic. Each of the three Linguistic treatments produced adjusted reading achievement of 2.9. In all other cases, similar programs were relatively effective or ineffective depending on the project in which they were found.

A study of the ranks from the standpoint of project influence reveals that:

1. Project A ranked fourth and sixth.
2. Project B ranked fifth and eighth.
3. Project C ranked twelfth, eighteenth, and nineteenth.
4. Project D ranked first, second, and third.
5. Project E ranked sixteenth and twenty-second.
6. Project F ranked fourteenth, and twentieth.
7. Project G ranked ninth and fourteenth.
8. Project H ranked seventeenth, and twenty-first.
9. Project I ranked tenth and eleventh.
10. Project J ranked seventh, twelfth and twenty-second.

The importance of the project or the school system in influencing reading achievement of pupils is very evident from this table. The programs used in project D ranked first, second, and third even though they were quite different programs. Furthermore, in most other cases,

Table 7:03

Adjusted Word Meaning Scores for Each Basal, I.T.A. Language Experience, Linguistic, and Phonic/Linguistic Treatment

Rank	Raw Score	Grade Score	Project	Treatment
1	26.9	3.8	D	Phon/Ling
2	24.5	3.6	D	I.T.A.
3	23.8	3.5	D	Basal
4	22.9	3.3	A	Lang Expr
5	22.3	3.2	B	I.T.A.
6	21.5	3.2	A	Basal
7	20.9	3.1	J	I.T.A.
8	20.1	3.0	B	Basal
9	19.8	3.0	G	Basal
10	19.7	3.0	I	Basal
10	19.7	3.0	I	Lang Expr
12	19.6	3.0	J	Phon/Ling
12	19.6	3.0	C	Lang Expr
14	19.4	2.9	G	Linguistic
14	19.4	2.9	F	Linguistic
16	19.2	2.9	E	I.T.A.
17	19.1	2.9	H	Linguistic
18	18.9	2.9	C	Basal
19	18.7	2.9	C	I.T.A.
20	18.4	2.8	F	Basal
21	17.5	2.8	H	Basal
22	17.3	2.7	J	Basal
22	17.3	2.7	E	Basal

the reading achievement of the various treatments within any project was quite similar.

The range of achievement among treatments and among projects is further illustrated in Table 7:04. Adjusted grade equivalents varied considerably for the separate Basal, I.T.A., Phonic/Linguistic, and Language Experience programs. Only the Linguistic treatment resulted in similar achievement from project to project. Treatment differences within projects, however, were almost always negligible. In eight of the ten projects, grade equivalent differences between the programs used in that project amounted to two months or less. It appears reasonable to conclude that the project in which a child is enrolled has a greater influence on his word recognition ability at the end of the second grade than does the particular program. This finding holds true even though treatment means have been adjusted for pupil differences in reading readiness and intelligence.

Treatments Ranked on Mean Reading Comprehension Score

Mean achievement for each of the treatment groups on the paragraph meaning subtest is presented in Table 7:05. No adjustments have been made in this analysis for differences among treatments and projects in readiness for reading. Achievement in terms of grade scores ranges from 2.6 to 3.3.

Rankings according to treatment reveal that:

1. The Phonic/Linguistic treatment ranked third and fourth.
2. The I.T.A. treatments ranked fourth, fourth, eleventh, twelfth, and twentieth.
3. Language Experience treatments ranked first, ninth, and ninteenth.
4. Linguistic programs ranked fourteenth, twenty-first, and twenty-third.
5. Basal treatments ranked first, seventh, seventh, tenth, thirteenth, fifteenth, sixteenth, seventeenth, eighteenth, and twenty-second.

Mean achievement varied considerably for each treatment from project to project. Only the Phonic/Linguistic treatment was relatively consistent with its ranking of third and fourth.

An investigation of the ranks from the standpoint of project influence reveals that:

1. Project A ranked first and second.
2. Project B ranked tenth and eleventh.
3. Project C ranked ninth, ninth, and twelfth.
4. Project D ranked fourth, fourth, and seventh.
5. Project E ranked thirteenth and twentieth.
6. Project F ranked sixteenth and twenty-first.
7. Project G ranked seventeenth and twenty-third.
8. Project H ranked seventh and fourteenth.
9. Project I ranked ninteenth and twenty-second.
10. Project J ranked third, fourth, and eighteenth.

Table 7:04

Ranges of Adjusted Word Meaning Raw Scores and Grade Equivalents for the Various Treatments and Projects

	High Score	Low Score	Range	High Grade Equivalent	Low Grade Equivalent	Range
Treatments						
Basal	23.8	17.3	6.5	3.5	2.7	.8
I.T.A.	24.5	18.7	5.8	3.6	2.9	.7
Lang Expr	22.9	19.6	3.3	3.3	3.0	.3
Linguistic	19.4	19.1	.3	2.9	2.9	—
Phon/Ling	26.9	19.6	7.3	3.8	3.0	.8
Projects						
A	22.9	21.5	1.4	3.3	3.2	.1
B	22.3	20.1	2.2	3.2	3.0	.2
C	19.6	18.7	.9	3.0	2.9	.1
D	26.9	23.8	3.1	3.8	3.5	.3
E	19.2	17.3	1.9	2.9	2.7	.2
F	19.4	18.4	1.0	2.9	2.8	.1
G	19.8	19.4	.4	3.0	2.9	.1
H	19.1	17.5	1.6	2.9	2.8	.1
I	19.8	19.7	.1	3.0	3.0	--
J	20.9	17.3	3.6	3.1	2.7	.4

Table 7:05

Unadjusted Paragraph Meaning Scores for Each Basal, I.T.A., Language Experience, Linguistic, and Phonic/Linguistic Treatment

Rank	Raw Score	Grade Score	Project	Treatment
1	37.6	3.3	A	Basal
1	37.6	3.3	A	Lang Expr
3	37.5	3.3	J	Phon/Ling
4	36.1	3.1	J	I.T.A.
4	36.1	3.1	D	Phon/Ling
4	36.1	3.1	D	I.T.A.
7	35.4	3.1	D	Basal
7	34.4	3.1	H	Basal
9	34.2	3.1	C	Lang Expr
10	33.6	3.0	B	Basal
11	32.6	3.0	B	I.T.A.
12	32.4	2.9	C	I.T.A.
13	31.9	2.9	E	Basal
14	31.6	2.9	H	Linguistic
15	31.5	2.9	C	Basal
16	31.3	2.9	F	Basal
17	30.0	2.8	G	Basal
18	29.8	2.8	J	Basal
19	29.7	2.8	I	Lang Expr
20	29.6	2.8	E	I.T.A.
21	28.2	2.6	F	Linguistic
22	27.8	2.6	I	Basal
23	27.0	2.6	G	Linguistic

Again all of the treatments used in any particular project resulted in very similar achievement except for Project J. Moreover, it is again evident that projects enrolling pupils with realtively high ability do not necessarily produce the best readers.

Achievement scores on the paragraph meaning subtest, adjusted for differences among treatments in reading readiness, are presented in Table 7:06. Adjusting the scores increased considerably the variability among treatments. The range among adjusted grade scores is from 2.6 to 4.0. The achievement scores in Table 7:06 have been adjusted by using pupils' scores on the seven premeasures as covariates. Therefore, pupils from the various treatments and various projects have been made similar in terms of reading readiness.

A study of the rankings for each of the various treatments reveals that:

1. The Phonic/Linguistic treatment ranked first and thirteenth.
2. The I.T.A. treatments ranked second, sixth, seventh, seventeenth, and twenty-third.
3. The Language Experience approaches ranked fourth, tenth, and fifteenth. The range in reading achievement amounted to four months.
4. The Linguistic treatments ranked twelfth, eighteenth, and twentieth.
5. The ten Basal programs ranked third, fifth, eighth, ninth, eleventh, thirteenth, sixteenth, nineteenth, twenty-first, and twenty-second. Grade score equivalents for the Basal group ranged from 2.6 to 3.5, even though treatment differences in readiness were adjusted statistically. Moreover, a single Basal series used in four projects ranked third, fifth, eighth, and twenty-first.

A study of the relative ranking of projects reveals that:

1. Project A ranked fourth and fifth.
2. Project B ranked sixth and eleventh, although both treatments averaged 3.0 in achievement.
3. Project C ranked fifteenth, sixteenth, and seventeenth.
4. Project D ranked first, second, and third.
5. Project E ranked twenty-second and twenty-third.
6. Project F ranked fourteenth and twentieth.
7. Project G ranked eighth and twelfth.
8. Project H ranked eighteenth and nineteenth.
9. Project I ranked ninth and tenth.
10. Project J ranked seventh, thirteenth, and twenty-first.

Table 7:06 clearly shows that pupils in the same project or school system show very similar achievement regardless of the particular method or program by which they learn how to read. The three different programs used in Project D ranked first, second, and third in effectiveness when differences in readiness among pupils in the twenty-three treatments were

Table 7:06

Adjusted Paragraph Meaning Scores for Each Basal, I.T.A., Language Experience, Linguistic, and Phonic/Linguistic Treatment

Rank	Raw Score	Grade Score	Project	Treatment
1	43.5	4.0	D	Phon/Ling
2	40.4	3.5	D	I.T.A.
3	40.0	3.5	D	Basal
4	38.2	3.3	A	Lang Expr
5	36.4	3.1	A	Basal
6	34.4	3.0	B	I.T.A.
7	33.7	3.0	J	I.T.A.
8	33.5	3.0	G	Basal
9	33.2	3.0	I	Basal
10	33.0	3.0	I	Lang Expr
11	32.8	3.0	B	Basal
12	32.4	2.9	G	Linguistic
13	32.0	2.9	J	Phon/Ling
14	31.2	2.9	F	Basal
15	31.1	2.9	C	Lang Expr
16	30.2	2.8	C	Basal
17	30.1	2.8	C	I.T.A.
18	29.9	2.7	H	Linguistic
19	29.1	2.7	H	Basal
20	29.0	2.7	F	Linguistic
21	28.8	2.7	J	Basal
22	27.7	2.6	E	Basal
23	27.4	2.6	E	I.T.A.

accounted for statistically. Pupils in the two programs in Project A were likewise similar in achievement, as were pupils in Projects C, B, E, F, G, H, and I. In each of these projects pupils in widely different programs achieved at practically the same rate. Only in Project J did treatments differ widely in effectiveness.

The comparative ranges in mean adjusted scores on the Paragraph Meaning test among treatments and projects are presented in Table 7:07. The separate Phonic/Linguistic programs in the two projects which utilized this treatment varied more than one year in mean grade equivalent. The highest-achieving Basal program was nine months superior to the lowest-achieving Basal program. A similar range was found among the five I.T.A. programs. Smaller variability was found among Language Experience and Linguistic treatments.

Differences in achievement between or among programs used in the same project are much smaller. In eight of the ten projects differences among adjusted mean grade equivalents amounted to two months or less. Pupil achievement in second grade reading comprehension was much more similar among pupils enrolled in the same experimental project than among pupils using similar instructional materials in different projects.

Summary

The phase of the analysis reported in this chapter was designed to assess the relative influence on pupil achievement of the project in which he was enrolled and the instructional program by which he learned to read. Each of the twenty-three experimental treatments used in the ten projects was ranked in terms of its effectiveness as measured by achievement on the Word Meaning and Paragraph Meaning subtests from the Stanford Achievement Test, Primary Battery II. Differences among the various pupils in reading readiness were accounted for by means of an analysis of covariance, using each of the seven reading readiness measures as covariates. The rankings of the twenty-three treatments were studied to determine the relative position of the various instructional programs and the relative ranking of projects.

Results of this analysis demonstrate clearly that second grade reading achievement is more clearly related to the project in which a child learns to read than to the specific reading program in which he is instructed. Pupils within any given project tend to achieve at a similar rate regardless of the instructional program utilized. On the other hand, instructional materials vary widely in their effectiveness from project to project. A program may be very effective in one project and relatively ineffective in another project, even though pupil differences in readiness among the projects have been adjusted statistically.

Table 7:07

Ranges of Adjusted Paragraph Meaning Raw Scores and Grade Equivalents for the Various Treatments and Projects

	High Score	Low Score	Range	High Grade Equivalent	Low Grade Equivalent	Range
Treatments						
Basal	40.0	27.7	12.3	3.5	2.6	.9
I.T.A.	40.4	27.4	13.0	3.5	2.6	.9
Lang Expr	38.2	31.1	7.1	3.3	2.9	.4
Linguistic	32.4	29.0	3.4	2.9	2.7	.2
Phon/Ling	43.5	32.0	11.5	4.0	2.9	1.1
Projects						
A	38.2	36.4	1.8	3.3	3.1	.2
B	34.4	32.8	1.6	3.0	3.0	--
C	31.1	30.1	1.0	2.9	2.8	.1
D	43.5	40.0	3.5	4.0	3.5	.5
E	27.7	27.4	.3	2.6	2.6	—
F	31.2	29.0	2.2	2.9	2.7	.2
G	33.5	32.4	1.1	3.0	2.9	.1
H	29.9	29.1	.8	2.7	2.7	--
I	33.2	33.0	.2	3.0	3.0	—
J	33.7	28.8	4.9	3.0	2.7	.3

Chapter VIII

SUMMARY AND CONCLUSIONS

The study discussed in this report is a continuation of the Cooperative Research Program in First Grade Reading Instruction. This report presents the results of an analysis of data collected at the end of the second grade. The findings of the first grade phase of the study are presented in an earlier report.

The second grade phase of the study was concerned primarily with three questions: (1) To what extent are various reading readiness characteristics of beginning first grade pupils related to achievement in reading, spelling, and language skills at the end of the second grade? (2) How do I.T.A., Linguistic, Language Experience, and Phonic/Linguistic programs compare in effectiveness with Basal programs at the end of the second grade? (3) What is the relative influence on second grade achievement of the project in which a pupil learns to read and the method and/or materials which comprise the instructional program?

Details concerning the sample, measuring instruments employed, and procedures of analysis are presented in the appropriate chapters of this report. The present chapter presents only a brief summary of findings and a discussion of the conclusions.

Analysis of Relationships

Correlation relationships for the sample used in this investigation were assessed (1) between performance on reading readiness tests administered at the beginning of first grade and achievement at the end of second grade on the Stanford Achievement Test, and (2) between measures of first grade achievement and second grade achievement. All correlation relationships were expressed in terms of Pearson product-moment correlation coefficients. Correlations among the various scores were computed separately for each of the five treatment categories—Basal, I.T.A., Language Experience, Linguistic, and Phonic/Linguistic. Correlation coefficients were calculated by pooling within sex, within class, and within project.

Summary of Findings

The findings of the analysis of relationships can be summarized as follows:

(1) The pre-reading ability most highly related to second grade word recognition was knowledge of letter names as measured by the Murphy-Durrell Letter Names Test. This subtest was the best predictor of second

grade word recognition in three of the five treatment categories. Furthermore, correlations between the letter names subtest and the Stanford Word Recognition Test ranged from .41 to .52. This relationship was somewhat smaller than the relationship between letter letter knowledge and word recognition at the end of the first grade.

(2) The beginning first grade pupil's ability to discriminate like and unlike beginning and ending consonants was also relatively highly related to achievement in second grade word recognition. Correlations between the Murphy-Durrell Phonemes Test administered at the beginning of the first grade and the Stanford Word Recognition Test administered at the end of second grade ranged from .38 to .49. These correlations, although somewhat smaller, were substantially the same as those found between the letter names subtest and the word recognition test.

(3) Intelligence as measured at the beginning of first grade by the Pintner-Cunningham Primary Test, also was a relatively good predictor of second grade word recognition achievement. Correlations between these variables ranged from .32 to .50, a somewhat greater range than that obtained for the letter names and phonemes subtests. This test predicted best for the I.T.A. treatment and least adequately for the Linguistic treatment.

(4) The letter names subtest was also the best predictor of achievement on second grade paragraph meaning test. Pre-reading knowledge of letters predicted best for three of the five treatment categories. Correlations ranged from .45 to .53. The similarity of coefficents from treatment to treatment indicates that letter knowledge predicts achievement in second grade reading comprehension in a similar manner for the Basal, I.T.A., Language Experience, Linguistic, and Phonic/Linguistic treatments.

(5) The Pintner-Cunningham Primary Test was the best predictor of second grade reading comprehension in two of the five treatment categories. Correlations between intelligence and reading comprehension ranged from .40 to .60. Intelligence was most highly related to second grade reading comprehension in the Phonic/Linguistic treatment and least related in the Linguistic treatment. Greater variability was found among correlation coefficients between intelligence and reading comprehension than between knowledge of letters and reading comprehension.

(6) The ability to discriminate like and unlike sounds, as measured by the Murphy-Durrell Phonemes Test, was also relatively highly related to reading comprehension at the end of the second grade. Correlations ranged from .40 to .52. Once again correlations obtained for the five treatments were very similar.

(7) The Murphy-Durrell Phonemes Test, Murphy-Durrell Letter Names Test, and the Pintner-Cunningham Primary Test were also most highly related to success in spelling, language, and word study skills as measured by the Stanford Achievement Test, Primary Battery II. Correlations generally ranged from .40 to .55.

(8) Measures of reading achievement at the end of the first grade correlated to a high degree with measures of second grade reading achievement. Most of the correlations were greater than .60.

(9) Correlations between the second grade word recognition test and second grade paragraph comprehension test ranged from .75 to .81. Furthermore, correlations were substantial among all of the second grade measures of achievement. For example, ability in word recognition at the end of the second grade correlated between .60 and .73 with spelling ability. In addition, correlation coefficients ranged from .57 to .71 for the measures of word study skills and word recognition.

Conclusions and Implications

One conclusion from this study is that ability grouping in second grade reading can be done with greater validity on the basis of first grade reading scores than on information about a pupil's readiness for reading at the beginning of first grade. This study lends further support to the principle that the best predictor of success in a learning task is prior success with a similar learning task. It is also evident that second grade pupils who do well in one area of achievement also are relatively successful in other areas. However, the relationship is far from a perfect one and it is possible for a second grade pupil to be relatively successful in reading, for example, and relatively unsuccessful in some other achievement area such as spelling. The high intercorrelations between the word recognition and paragraph meaning tests indicate that reading ability at the end of the second grade is a highly unitary accomplishment. It is likely at this stage that word recognition is so demanding that comprehension is highly influenced by it.

There is little indication that any of the readiness subtests measured skills uniquely related to success in the various types of programs utilized in this investigation although intelligence was somewhat more highly related to success in Phonic/Linguistic programs than in the other programs. In general, however, results indicate that it is not feasible to place pupils differentially in instructional programs on the basis of a profile of readiness tests administered early in the first grade. Measures of letter knowledge, auditory discrimination, and intelligence were most highly related to second grade achievement in all treatments. Furthermore, the predictive validity of each of these measures is substantially the same as that obtained by an entire readiness battery test. Therefore, if the prediction of reading success is the sole criterion, a single subtest such as the letter names test would be just as effective.

Correlations between readiness measures and achievement were only slightly lower at the end of second grade than those found at the end of the first grade. Furthermore, readiness characteristics related to success in second grade achievement were also those most highly related at the end of the first grade.

The various readiness test measures predicted each of the various second grade achievement measures about equally well. None of the readiness measures was uniquely related to performance on any of the second grade achievement measures. Letter knowledge, auditory discrimination, and intelligence were related to reading, spelling, and language ability to essentially the same degree at the end of grade two.

It must be emphasized that no cause and effect relationships can be inferred from this phase of the investigation. The fact that knowledge of letters is highly related to second grade reading achievement does not mean that teaching letter knowledge to beginning first graders will necessarily result in successful experiences in learning to read. Perhaps, each of the abilities (letter recognition and reading) is related to a thrid factor such as home background, for example. This phase of the study was not experimental in nature and should not be construed as an attempt to test the value of teaching children letter knowledge, auditory discrimination, or visual discrimination.

Analysis of Methodology

The various innovative instructional programs utilized in this investigation were evaluated by comparing their effectiveness with that of typical basal reading programs used in the same project. Direct comparisons between and among innovative programs were not possible because not all programs were used in all projects. Extensive project differences in pupil readiness for reading and in pupil reading achievement made it impossible to compare a program used in one project with another program used in another project. For purposes of analysis, programs were arbitrarily categorized as Basal programs, Initial Teaching Alphabet programs, Language Experience programs, Linguistic programs, and Phonic/Linguistic programs. Programs were assigned to these groupings on the basis of common characteristics described in Chapter VI. Data from projects which had in common a Basal program and an I.T.A. program, or a Basal program and any other of the innovative programs, were combined to test the effectiveness of the various programs across project lines.

Summary of Findings

In the following sections of this chapter brief summaries of findings for the various basal versus non-basal comparisons are presented. More detailed discussions are presented in Chapter VI.

Summary of Basal versus I.T.A. Comparison. Pupils taught in Basal programs and pupils taught in I.T.A. programs did not differ significantly in reading comprehension at the end of the second grade. The two groups likewise did not differ in rate of reading. In general, the differences between the two groups in English usage and in mechanics of punctuation were also found to be chance differences. However, pupils whose initial instruction in reading utilized the Initial Teaching Alphabet were significantly superior in word recognition skills and spelling skills at the end of the second grade. Pupils in the I.T.A. treatment were significantly superior in performance on the Stanford Word Meaning Test, the Fry Test of Phonetically Regular Words, and the Gates Test of high frequency words. Furthermore, significant differences favored the I.T.A. group on the Stanford Spelling test. It appears that the use of a regular code for initial instruction in reading produces better than average ability to decode the printed word and encode the spoken language.

Summary of Basal versus Language Experience Comparison. In general, no significant differences were found between the Language Experience and Basal treatments in end-of-second-grade achievement. Pupils from the two treatments were found to be similar in spelling ability, language ability, word study skills, paragraph comprehension, and word recognition. The pupils who comprised the Language Experience subsample were found to be significantly superior on the Fry Word List, but this superiority in word recognition did not exist on the Stanford Achievement Test. Achievement after two years of instruction in these quite different programs was very similar. The similarity in achievement included the measures of reading, which might reasonably be expected to favor the Basal approach, and the measures of writing (spelling and language), which might reasonably be expected to favor the Language Experience approach.

Summary of Basal versus Linguistic Comparison. The Linguistic and Basal treatments operated in a somewhat different fashion from project to project. In general, Linguistic pupils were somewhat better in the skills of word recognition and spelling but this finding was by no means unequivocal. No differences were found in reading comprehension. Basal pupils were generally superior in word study skills, an unusual finding in light of the slight superiority of Linguistic pupils in spelling and word recognition.

Summary of Basal versus Phonic/Linguistic Comparison. Only two projects had in common a Basal treatment and a Phonic/Linguistic treatment. Therefore, the results are based on fewer cases than the results for the other basal versus non-basal comparisons. However, the Phonic/Linguistic treatment in the two projects studied produced superior achievement in reading, spelling, and general language ability at the end of the second grade.

General Findings. On the average, girls were superior to boys in reading readiness at the beginning of first grade. Girls were also superior in reading achievement at the end of the second grade. In most cases, however, differences in reading achievement disappeared when achievement scores were adjusted for differences in readiness. The superiority of girls in achievement at the end of the second grade was largely a function of their greater readiness at the beginning of first grade. In addition, none of the treatments had a unique effect on the achievement of boys or girls. The absence of significant sex by treatment interactions indicated that girls tended to be better readers in all programs.

Another general finding was that significant project differences in achievement existed even after adjustments were made for differences in pupil readiness for reading among projects. Furthermore, fewer project by treatment interactions were significant at the end of second grade than were found at the end of first grade. The various programs appeared to operate in a more similar manner across projects during the second grade.

Conclusions and Implications

To the extent to which pupils utilized in this investigation were representative of first and second grade pupils as a whole and to the extent to which the instruments are valid, reliable, and representative tests of reading readiness, reading and spelling, a number of conclusions appear to be valid.

The teaching of phonics appears to be highly related to word recognition achievement at the end of second grade. This finding is true for a wide variety of techniques for teaching sound-symbol relationships. Programs categorized under the labels I.T.A., Linguistic, and Phonic/Linguistic all emphasize some aspect of phonics instruction to a greater degree than do typical basal readers. However, the way in which phonics is taught varies considerably from one program to another. In certain of these programs (Early to Read, I.T.A., for example) pupils are first taught symbols, then the sounds associated with them, then how to use this knowledge in decoding words. This method of phonics instruction is often called the synthetic approach. The Linguistic programs, on the other hand, encourage pupils to discover the letters which represent certain sounds and there is no attempt to blend sounds into words. In each of these quite different programs, pupils tended to be better in word recognition at the end of second grade than the Basal pupils enrolled in the same school systems.

The influence of phonics instruction on second grade word recognition achievement is also indicated by the fact that Language Experience pupils and Basal pupils did not differ significantly in word recognition at the end of second grade. Neither of these approaches ordinarily has a heavy emphasis on phonics in the initial stages of reading instruction. On the other hand, the I.T.A., Linguistic, and Phonic/Linguistic programs emphasize phonics to a relatively high degree and each of these programs produced pupils with superior word recognition abilities to pupils in Basal programs in the same project. It would be of interest to note whether or not I.T.A., Linguistic and Phonic/Linguistic pupils maintain this superiority in word recognition in later grades. It may be that this heavy phonics emphasis in the initial stages of reading instruction has only a transitory effect on word recognition skills. It may even be that heavy phonics emphasis has a detrimental effect on reading ability in later years. Nevertheless, the evidence from this study is clear that phonics instruction is related to success in word recognition at the end of the second grade.

A related conclusion is that various kinds of control of sound-symbol correspondences help the child to recognize more words at an earlier stage. The I.T.A. programs, Phonic/Linguistic programs, and various Linguistic programs all produced first grade pupils with superior word recognition abilities. Furthermore, all three programs produced significantly superior spellers after two years of instruction. Control of vocabulary, either by means of a transitional alphabet or by means of introducing initially only regularly represented words, appears to facilitate acquisition of skill in unlocking words and in spelling. Some control of vocabulary according to phoneme-grapheme correspondences is likely to be helpful in the teaching of primary reading and spelling.

In light of the superiority of the I.T.A., Phonic/Linguistic, and Linguistic programs in second grade word recognition and spelling achievement, attempts should be made to discover why these programs are effective. The question might be raised, for example, whether I.T.A. and Phonic/Linguistic programs are superior in word recognition and spelling because of characteristics of the total program or because of such individual elements as heavy phonics emphasis, introduction of a large vocabulary, use of consistent alphabetic code, or utilization of a writing component. It may be that these programs are superior in word recognition simply because they introduce a larger number of words than the typical basal reader. On the other hand, the superiority may be a function of the way in which words are introduced. Future research should focus on this problem.

The superiority in word recognition of pupils in various phonics emphasis programs is not, as a general rule, demonstrated in the area of reading comprehension. This finding would indicate that certain of these programs may not be concentrating as much on comprehension as a reading outcome as they are on word recognition. The assumption can also be made that ability to recognize words does not transfer automatically to ability to comprehend the meaning of sentences and paragraphs. This finding does not support the contention that the pupil's only task in learning to read is to develop the ability to translate graphemic symbols into sounds on the assumption that once he has decoded the words he will understand their meaning. Direct instruction in comprehension is apparently essential.

The transition from I.T.A. to traditional orthography appears to be a relatively simple task. Pupils whose initial instruction was in I.T.A. recognized more words and were significantly better spellers at the end of the second grade. The superiority of I.T.A. pupils in spelling is especially interesting because I.T.A. pupils found spelling difficult at the end of the first grade. There appears to be little interference between the old learning (I.T.A.) and the new learning (traditional orthography) as far as spelling and decoding words are concerned.

Another conclusion from this study is that expectations of pupil accomplishment in initial reading instruction probably can be raised. The results of this study indicate that pupils can learn to recognize more words than are commonly introduced in reading programs. Children today are undoubtedly better equipped for reading instruction when they enter first grade. However, although there appears to be certain evidence that pupils can learn more words, the crucial question still remains as to whether or not pupils should learn more words. Longitudinal studies may yet show the importance of introducing vocabulary slowly and of repeating it often. Evidence available at this point is insufficient to test the contention of many reading authorities that early concentrated emphasis on phonics has a negative effect on reading fluency and comprehension in later grades. The advantage of introducing vocabulary more rapidly and of accelerating the introduction of phonics skills is that it enables the pupil to become an independent reader at an earlier age. Additional longitudinal information is necessary to evaluate the long-range consequences of these instructional procedures.

There is also evidence that a writing component is an effective addition to a primary reading program. Phonic/Linguistic and I.T.A. pupils both were taught to write the symbols as part of their introduction to them. This writing component may have been influential in the success of these programs in producing pupils with superior word recognition and spelling skills. It is likely that writing symbols in connection with phonics instruction is helpful in aiding the pupil to learn sound-symbol correspondences. Furthermore, writing irregularly represented words such as "the" and "of" should be helpful in committing such high frequency words to the sight vocabulary.

It is also obvious from this investigation that first and second grade teachers will have to hold different expectations concerning the reading achievement of boys and girls. On the average, boys cannot be expected to achieve at the same level as girls under current methods of instruction. It is also evident that girls can be expected to be more ready for reading when they enter school. It would be interesting to determine whether or not differences in reading achievement at the end of the first and second grade would cease to exist if boys could be brought to the same level of readiness as girls before they began reading instruction. The study also indicated that boys and girls do not profit uniquely from any of the programs utilized in this investigation. On the average girls' achievement is superior to boys' achievement no matter what approach to beginning reading is used.

One of the most important implications of this study is that future research should center on teacher and learning situation characteristics rather than method and materials. The extensive range among classrooms within any method points out the importance of elements in the learning situation over and above the materials employed. Furthermore, the persistence of project differences in achievement even after project differences in pupil readiness were adjusted statistically indicates that characteristics other than those related to pupils are highly influential in reading success. The elements of the learning situation attributable to teachers, classrooms, schools, and school systems are obviously extremely important. Improvement of reading instruction is more likely to result from improved selection and training of teachers, from improved in-service training programs, and from improved school learning climates, rather than from changes in instructional materials.

Another general conclusion is that it is impossible to assess the relative effectiveness of programs unless they are used in the same project. Project differences are so great even with pupils' readiness for reading controlled that programs utilized in a favored project would demonstrate a distinct advantage over those used in a less favored project regardless of the effectiveness of the program.

Relative Influence of Project and Treatment

An analysis was also conducted whereby each treatment within each project was compared with each of the other treatments in each of the other projects. In this section of the analysis, each Basal treatment was considered a separate treatment. Likewise, each I.T.A. treatment, each Language Experience treatment, each Linguistic treatment, and each Phonic/Linguistic treatment was considered a separate treatment. Pupil differences in readiness among the various treatments and projects were adjusted by means of covariance. This analysis was designed to evaluate the relative influence of instructional programs and projects in determining the reading ability of second grade pupils. If an instructional program, such as the Language Experience apparoach, for example, produced relatively high achievement in reading regardless of the project in which a pupil was enrolled, this would tend to point out the importance of instructional method. If, on the other hand, all methods within a particular project tended to produce achievement at approximately the same rate, this would tend to point of the importance of project or school system.

The findings of this analysis are presented in Chapter VII. In general, projects appeared to have a greater influence on the reading ability of pupils than did the particular instructional method or materials utilized. Specific programs were relatively effective in one project, relatively ineffective in other projects. On the other hand, all programs used in the same project were found to be quite similar in effectiveness. This would indicate that the entire instructional setting is involved in the effectiveness of an instructional program in reading. Differences in method or materials alone do not alter, to any great extent, the reading growth of pupils. The section of the analysis again points out the importance in future research of focusing on teacher and learning situation characteristics rather than methodology and materials.

Limitations

Certain limitations of this study are presented in Chapter VI. Because of their importance in interpreting the findings and conclusions, they are repeated below.

There are a number of limitations involved in interpreting the findings of the analysis of methodology. A major limitation is that not all treatments were represented in all projects, and as a result it was not feasible to make direct comparisons between such treatments as I.T.A. and Linguistic, Language Experience and Phonic/Linguistic, or any other combination of innovative programs. The extreme project differences in achievement would have made comparisons between treatments found in different projects meaningless. As a result, it was possible only to compare the various innovative treatments with the basal treatment in each project. Of course, the comparisons between certain innovative treatments have been made and reported in the reports of the individual projects.

Another major limitation is that treatments labeled Linguistic, Basal, and I.T.A. did not follow exactly the same program in each project. The basal reader approach was considered a single treatment even though a variety of programs were used in the various projects. Furthermore, materials within the Linguistic and I.T.A. categories also differed from one investigation to another. The presence or absence of significant treatment differences between a given basal and non-basal program within a project may have been a result of the specific materials used in that project. It would be unusual indeed if all Basal, I.T.A., or Linguistic programs were equally effective. Furthermore, the Language Experience approach was not exactly the same instructional program in the projects which utilized this treatment. The arbitrary grouping of programs and materials should not disguise the fact that differences existed in instructional programs given the same label.

Still another problem is involved in interpreting the findings concerning transitional programs such as the Initial Teaching Alphabet. Ordinarily pupils make the transition from I.T.A. to traditional orthography in late first grade or early second grade. Instruction for these pupils then goes in many different directions including placement in basal readers, language experience approaches, or individualized reading programs. Therefore, when evaluation of reading ability takes place at the end of the second grade, the typical I.T.A. pupil has had nearly as much instruction in some program utilizing traditional orthography as he has had in the Initial Teaching Alphabet. In this investigation achievement of I.T.A. pupils was compared with achievement in Basal programs. In cases where differences were found, the question remains as to how much of the I.T.A. pupils' achievement at the end of the second grade is a function of his initial instruction in I.T.A. and how much is a function of his later instruction in some other type of program. Similar problems exist with certain of the Linguistic programs.

It should also be emphasized that evaluation of the various programs has been carried out only through the second grade. Terminal reading ability cannot necessarily be predicted on the basis of reading achievement after two years. The possibility exists that programs which appear to be superior in terms of achievement in the first grade and second grade may lose that superiority in terms of reading ability in later years. It is even possible that programs which appear superior after the second grade actually turn out to be less than adequate programs by the end of sixth grade. Generalizing about the effectiveness of the programs must take into account the fact that the analysis to date has considered only a relatively small segment of the developmental reading program for elementary school pupils.

A limitation of most studies of this nature is that it is much more difficult to measure attitudinal aspects of reading than the more mechanical aspects of the reading act. Reading ability in this study has been evaluated in terms of ability to recognize words, ability to comprehend short paragraphs, and ability to read with speed and accuracy. Standardized tests are available to measure these outcomes. However, the argument could be advanced that a more important outcome of any reading program is to engender in pupils a desire to read. Although measures of reading interest were collected by the project directors and are recorded in the individual reports of the projects, no analysis was made of interest and attitude in the evaluation of reading achievement reported in this volume. Problems of reliability and validity with respect to attitude measures make it very difficult at the primary level to analyze these aspects of reading achievement.

The analysis of methodology in this report involved comparing Basal and innovative programs used in the same project. The very nature of this analysis makes it appear likely that the newer innovative programs profited from whatever "Hawthorne effect" was operating in any project. It is likely that pupil awareness of experimentation, parental interest, and teacher enthusiasm are more likely to be associated with novel programs. Although efforts were made in the various projects to make all programs equally novel and interesting, it is unlikely that Basal programs were regarded with the same degree of inquiry as were the innovative programs.

In some instances there is a problem arising from non-representative retention. For some reason, non-persist pupils in one treatment were better achievers in first grade than were non-persist pupils in the other treatment while the reverse was true for pupils who persisted. This non-representative retention may be a factor influencing the results. Furthermore, in almost every instance, the pupils who persisted through the second grade were significantly superior in first grade achievement than were pupils lost during the second grade phase of the study. Therefore, pupils on whom results are reported in this study are superior to pupils from the participating projects in general. The generalizability of the findings is therefore limited.

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APPENDIX A

NUMBER OF OBSERVATIONS INVOLVED IN THE CALCULATION OF CLASS MEANS BY SEX AND PROJECT

The following pages indicate the numbers of boys and girls who comprised each of the class means utilized in the analysis of methodology described in Chapter VI. All classes enrolling four or fewer boys and girls are indicated with an asterisk. These means were not used in the analysis.

Number of Observations Involved in the Calculation of Class Means by Sex and Project

Project	Class Code	Sex	Treatment	No. of Observ.
Cleland	051	Boys	Basal	10
	051	Girls	Basal	8
	061	Boys	Basal	12
	061	Girls	Basal	11
	071	Boys	Basal	12
	071	Girls	Basal	13
	101	Boys	Basal	14
	101	Girls	Basal	16
	112	Boys	Basal	13
	112	Girls	Basal	13
	121	Boys	Basal	13
	121	Girls	Basal	16
	131	Boys	Basal	13
	131	Girls	Basal	11
	181	Boys	Basal	16
	181	Girls	Basal	8
	201	Boys	Basal	6
	201	Girls	Basal	7
	011	Boys	Lang Expr	7
	011	Girls	Lang Expr	10
	021	Boys	Lang Expr	7
	021	Girls	Lang Expr	10
	031	Boys	Lang Expr	6
	031	Girls	Lang Expr	8
	041	Boys	Lang Expr	7
	041	Girls	Lang Expr	6
	081	Boys	Lang Expr	7
	081	Girls	Lang Expr	15
	111	Boys	Lang Expr	18
	111	Girls	Lang Expr	14
	132	Boys	Lang Expr	10
	132	Girls	Lang Expr	13
	171	Boys	Lang Expr	5
	171	Girls	Lang Expr	11
	191	Boys	Lang Expr	10
	191	Girls	Lang Expr	6

Project	Class Code	Sex	Treatment	No. of Observ.
Fry	051	Boys	Basal	8
	051	Girls	Basal	12
	052	Boys	Basal	6
	052	Girls	Basal	10
	061	Boys	Basal	3*
	061	Girls	Basal	6
	082	Boys	Basal	7
	082	Girls	Basal	5
	103	Boys	Basal	6
	103	Girls	Basal	6
	104	Boys	Basal	10
	104	Girls	Basal	8
	033	Boys	ITA	11
	033	Girls	ITA	9
	034	Boys	ITA	5
	034	Girls	ITA	9
	042	Boys	ITA	1*
	042	Girls	ITA	1*
	071	Boys	ITA	11
	071	Girls	ITA	12
	091	Boys	ITA	10
	091	Girls	ITA	13
	111	Boys	ITA	9
	111	Girls	ITA	4*
	121	Boys	ITA	5
	121	Girls	ITA	4*
Hahn	005	Boys	Basal	4*
	005	Girls	Basal	4*
	010	Boys	Basal	9
	010	Girls	Basal	6
	015	Boys	Basal	6
	015	Girls	Basal	6
	020	Boys	Basal	7
	020	Girls	Basal	7
	025	Boys	Basal	9
	025	Girls	Basal	8

Asterisk indicates classes dropped from the analysis.

Project	Class Code	Sex	Treatment	No. of Observ.
Hahn (cont.)	030	Boys	Basal	11
	030	Girls	Basal	13
	035	Boys	Basal	13
	035	Girls	Basal	13
	040	Boys	Basal	9
	040	Girls	Basal	11
	045	Boys	Basal	15
	045	Girls	Basal	8
	050	Boys	Basal	5
	050	Girls	Basal	9
	055	Boys	Basal	11
	055	Girls	Basal	6
	006	Boys	ITA	6
	006	Girls	ITA	7
	011	Boys	ITA	9
	011	Girls	ITA	7
	016	Boys	ITA	8
	016	Girls	ITA	10
	021	Boys	ITA	1*
	021	Girls	ITA	5
	026	Boys	ITA	9
	026	Girls	ITA	5
	031	Boys	ITA	10
	031	Girls	ITA	6
	036	Boys	ITA	9
	036	Girls	ITA	8
	041	Boys	ITA	14
	041	Girls	ITA	10
	046	Boys	ITA	8
	046	Girls	ITA	5
	051	Boys	ITA	11
	051	Girls	ITA	11
	056	Boys	ITA	10
	056	Girls	ITA	5
	007	Boys	Lang Expr	5
	007	Girls	Lang Expr	10
	012	Boys	Lang Expr	7
	012	Girls	Lang Expr	5

Project	Class Code	Sex	Treatment	No. of Observ.
Hahn (cont.)	017	Boys	Lang Expr	9
	017	Girls	Lang Expr	9
	022	Boys	Lang Expr	11
	022	Girls	Lang Expr	9
	027	Boys	Lang Expr	9
	027	Girls	Lang Expr	15
	032	Boys	Lang Expr	3*
	032	Girls	Lang Expr	8
	037	Boys	Lang Expr	9
	037	Girls	Lang Expr	7
	042	Boys	Lang Expr	10
	042	Girls	Lang Expr	6
	047	Boys	Lang Expr	7
	047	Girls	Lang Expr	5
	052	Boys	Lang Expr	9
	052	Girls	Lang Expr	11
	057	Boys	Lang Expr	9
	057	Girls	Lang Expr	10
Hayes	011	Boys	Basal	6
	011	Girls	Basal	8
	021	Boys	Basal	10
	021	Girls	Basal	7
	023	Boys	Basal	9
	023	Girls	Basal	8
	031	Boys	Basal	2*
	031	Girls	Basal	2*
	062	Boys	ITA	3*
	062	Girls	ITA	8
	071	Boys	ITA	8
	071	Girls	ITA	10
	081	Boys	ITA	8
	081	Girls	ITA	6
	082	Boys	ITA	8
	082	Girls	ITA	8
	091	Boys	ITA	11
	091	Girls	ITA	12

Project	Class Code	Sex	Treatment	No. of Observ.
Hayes (cont.)	013	Boys	B + P	9
	013	Girls	B + P	8
	041	Boys	B + P	9
	041	Girls	B + P	8
	043	Boys	B + P	3*
	043	Girls	B + P	7
	051	Boys	B + P	12
	051	Girls	B + P	12
	061	Goys	B + P	6
	061	Girls	B + P	8
	012	Boys	Phon/Ling	9
	012	Girls	Phon/Ling	10
	022	Boys	Phon/Ling	10
	022	Girls	Phon/Ling	5
	032	Boys	Phon/Ling	7
	032	Girls	Phon/Ling	7
	033	Boys	Phon/Ling	5
	033	Girls	Phon/Ling	7
	042	Boys	Phon/Ling	6
	042	Girls	Phon/Ling	9
Mazurkiewicz	021	Girls	Basal	3*
	031	Boys	Basal	6
	031	Girls	Basal	6
	043	Boys	Basal	9
	043	Girls	Basal	10
	063	Boys	Basal	5
	063	Girls	Basal	5
	081	Boys	Basal	8
	081	Girls	Basal	12
	092	Boys	Basal	6
	092	Girls	Basal	6
	101	Boys	Basal	11
	101	Girls	Basal	4*
	121	Boys	Basal	14
	121	Girls	Basal	9

Project	Class Code	Sex	Treatment	No. of Observ.
Mazurkiewicz (cont.)	131	Boys	Basal	6
	131	Girls	Basal	8
	141	Boys	Basal	7
	141	Girls	Basal	6
	151	Boys	Basal	4*
	151	Girls	Basal	7
	171	Boys	Basal	4*
	171	Girls	Basal	6
	181	Boys	Basal	5
	181	Girls	Basal	4*
	182	Boys	Basal	10
	182	Girls	Basal	5
	191	Boys	Basal	9
	191	Girls	Basal	7
	211	Boys	Basal	9
	211	Girls	Basal	12
	022	Boys	ITA	5
	022	Girls	ITA	2*
	023	Boys	ITA	11
	023	Girls	ITA	4*
	041	Boys	ITA	1*
	042	Boys	ITA	9
	042	Girls	ITA	11
	051	Boys	ITA	6
	051	Girls	ITA	5
	062	Boys	ITA	5
	062	Girls	ITA	5
	071	Boys	ITA	8
	071	Girls	ITA	11
	082	Boys	ITA	11
	082	Girls	ITA	8
	091	Boys	ITA	2*
	091	Girls	ITA	7
	102	Boys	ITA	12
	102	Girls	ITA	11
	161	Boys	ITA	11
	161	Girls	ITA	6
	201	Boys	ITA	10
	201	Girls	ITA	10

Project	Class Code	Sex	Treatment	No. of Observ.
Ruddell	011	Boys	Basal	14
	011	Girls	Basal	6
	021	Boys	Basal	10
	021	Girls	Basal	7
	091	Boys	Basal	8
	091	Girls	Basal	9
	101	Girls	Basal	5
	131	Boys	Basal	5
	131	Girls	Basal	1*
	142	Boys	Basal	7
	142	Girls	Basal	5
	031	Boys	Linguistic	12
	031	Girls	Linguistic	10
	111	Boys	Linguistic	11
	111	Girls	Linguistic	7
	112	Boys	Linguistic	3*
	112	Girls	Linguistic	2*
	151	Boys	Linguistic	6
	151	Girls	Linguistic	7
	161	Boys	Linguistic	4*
	161	Girls	Linguistic	1*
Schneyer	011	Boys	Basal	9
	011	Girls	Basal	12
	021	Boys	Basal	2*
	021	Girls	Basal	15
	031	Boys	Basal	14
	031	Girls	Basal	15
	041	Boys	Basal	11
	041	Girls	Basal	13
	051	Boys	Basal	10
	051	Girls	Basal	13
	071	Boys	Basal	14
	071	Girls	Basal	9
	081	Boys	Basal	15
	081	Girls	Basal	10
	091	Boys	Basal	8
	091	Girls	Basal	6

Project	Class Code	Sex	Treatment	No. of Observ.
Schneyer (cont.)	101	Boys	Basal	10
	101	Girls	Basal	9
	111	Boys	Basal	8
	111	Girls	Basal	6
	121	Boys	Basal	8
	121	Girls	Basal	5
	131	Boys	Linguistic	12
	131	Girls	Linguistic	14
	141	Boys	Linguistic	16
	141	Girls	Linguistic	15
	151	Boys	Linguistic	14
	151	Girls	Linguistic	12
	161	Boys	Linguistic	13
	161	Girls	Linguistic	13
	171	Boys	Linguistic	9
	171	Girls	Linguistic	9
	181	Boys	Linguistic	10
	181	Girls	Linguistic	9
	191	Boys	Linguistic	18
	191	Girls	Linguistic	11
	201	Boys	Linguistic	15
	201	Girls	Linguistic	8
	221	Boys	Linguistic	7
	221	Girls	Linguistic	16
	231	Boys	Linguistic	7
	231	Girls	Linguistic	11
	241	Boys	Linguistic	13
	241	Girls	Linguistic	8
Sheldon	021	Boys	Basal	10
	021	Girls	Basal	6
	051	Boys	Basal	15
	051	Girls	Basal	6
	101	Boys	Basal	7
	101	Girls	Basal	9
	111	Boys	Basal	7
	111	Girls	Basal	12

Project	Class Code	Sex	Treatment	No. of Observ.
Sheldon (cont.)	131	Boys	Basal	1*
	131	Girls	Basal	3*
	161	Boys	Basal	7
	161	Girls	Basal	9
	162	Boys	Basal	7
	162	Girls	Basal	9
	011	Boys	Linguistic	6
	011	Girls	Linguistic	5
	031	Boys	Linguistic	17
	031	Girls	Linguistic	9
	041	Boys	Linguistic	7
	041	Girls	Linguistic	10
	061	Boys	Linguistic	5
	061	Girls	Linguistic	7
	071	Boys	Linguistic	8
	071	Girls	Linguistic	11
	081	Boys	Linguistic	14
	081	Girls	Linguistic	6
	091	Boys	Linguistic	10
	091	Girls	Linguistic	6
	102	Goys	Linguistic	7
	102	Girls	Linguistic	12
	103	Boys	Linguistic	7
	103	Girls	Linguistic	13
	121	Boys	Linguistic	8
	121	Girls	Linguistic	5
	141	Boys	Linguistic	3*
	141	Girls	Linguistic	7
	142	Boys	Linguistic	10
	142	Girls	Linguistic	8
	151	Boys	Linguistic	9
	151	Girls	Linguistic	16
	152	Boys	Linguistic	15
	152	Girls	Linguistic	8

Project	Class Code	Sex	Treatment	No. of Observ.
Stauffer	141	Boys	Basal	6
	141	Girls	Basal	6
	142	Boys	Basal	6
	142	Girls	Basal	9
	143	Boys	Basal	8
	143	Girls	Basal	8
	144	Boys	Basal	10
	144	Girls	Basal	6
	145	Boys	Basal	8
	145	Girls	Basal	9
	151	Boys	Basal	11
	151	Girls	Basal	5
	152	Boys	Basal	12
	152	Girls	Basal	7
	153	Boys	Basal	11
	153	Girls	Basal	11
	154	Boys	Basal	9
	154	Girls	Basal	8
	155	Boys	Basal	8
	155	Girls	Basal	9
	111	Boys	Lang Expr	12
	111	Girls	Lang Expr	4*
	112	Boys	Lang Expr	9
	112	Girls	Lang Expr	12
	113	Boys	Lang Expr	9
	113	Girls	Lang Expr	14
	114	Boys	Lang Expr	13
	114	Girls	Lang Expr	11
	121	Boys	Lang Expr	11
	121	Girls	Lang Expr	7
	122	Boys	Lang Expr	12
	122	Girls	Lang Expr	10
	123	Boys	Lang Expr	7
	123	Girls	Lang Expr	10
	124	Boys	Lang Expr	12
	124	Girls	Lang Expr	8

Project	Class Code	Sex	Treatment	No. of Observ.
Stauffer (cont.)	131	Boys	Lang Expr	9
	131	Girls	Lang Expr	7
	132	Boys	Lang Expr	4*
	132	Girls	Lang Expr	7
Tanyzer	061	Boys	Basal	4*
	061	Girls	Basal	7
	062	Boys	Basal	12
	062	Girls	Basal	9
	071	Boys	Basal	11
	071	Girls	Basal	9
	081	Boys	Basal	8
	081	Girls	Basal	9
	082	Boys	Basal	5
	082	Girls	Basal	12
	091	Boys	Basal	16
	091	Girls	Basal	10
	092	Boys	Basal	14
	092	Girls	Basal	9
	101	Boys	Basal	8
	101	Girls	Basal	6
	102	Boys	Basal	12
	102	Girls	Basal	10
	011	Boys	ITA	15
	011	Girls	ITA	15
	012	Boys	ITA	14
	012	Girls	ITA	11
	021	Boys	ITA	16
	021	Girls	ITA	11
	022	Boys	ITA	12
	022	Girls	ITA	10
	031	Boys	ITA	8
	031	Girls	ITA	12
	032	Boys	ITA	12
	032	Girls	ITA	12
	041	Boys	ITA	7
	041	Girls	ITA	11

Project	Class Code	Sex	Treatment	No. of Observ.
Tanyzer (cont.)	042	Boys	ITA	12
	042	Girls	ITA	9
	051	Boys	ITA	8
	051	Girls	ITA	12
	111	Boys	Phon/Ling	10
	111	Girls	Phon/Ling	8
	112	Boys	Phon/Ling	7
	112	Girls	Phon/Ling	9
	113	Boys	Phon/Ling	12
	113	Girls	Phon/Ling	7
	114	Boys	Phon/ling	10
	114	Girls	Phon/Ling	9
	115	Boys	Phon/Ling	9
	115	Girls	Phon/Ling	8
	116	Boys	Phon/Ling	13
	116	Girls	Phon/Ling	9
	117	Boys	Phon/Ling	10
	117	Girls	Phon/Ling	10
	118	Boys	Phon/Ling	12
	118	Girls	Phon/Ling	8

APPENDIX B

TABLES PERTINENT TO THE WITHIN PROJECTS ANALYSIS OF THE VARIOUS BASAL VERSUS NON-BASAL COMPARISONS

Within Projects Analysis of Variance on Premeasures
for Basal vs I.T.A. Treatments

Project	Eff.	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
		F	P	F	P	F	P	F	P	F	P	F	P	F	P
Fry	Sex	.880	.350	4.594f	.034	.381	.538	.271	.603	.001	.979	.773	.381	4.813f	.030
	Trt	.044	.834	2.007	.159	4.407b	.038	1.097	.297	.069	.793	2.278	.133	1.259	.264
	SxT	.004	.948	.067	.796	.103	.749	.020	.889	.068	.794	.046	.831	.386	.535
Hahn	Sex	.644	.423	2.270	.134	.030	.863	2.496	.116	.714	.400	2.990	.086	.233	.630
	Trt	3.111	.080	.103	.749	.575	.450	1.220	.271	1.112	.294	1.425	.235	.351	.555
	SxT	.016	.901	.053	.819	.075	.785	.103	.748	.000	.995	1.017	.315	.114	.736
Hayes	Sex	.101	.751	1.132	.289	.607	.437	.045	.832	.532	.471	.000	.994	.065	.799
	Trt	.131	.718	.233	.630	1.175	.280	.177	.674	.050	.824	.383	.537	5.105b	.025
	SxT	.574	.450	.001	.976	.305	.582	.059	.808	.154	.695	1.539	.217	.095	.759
Mazurk.	Sex	8.303F	.005	8.234F	.005	1.835	.178	.633	.428	.307	.580	.033	.856	2.762	.099
	Trt	.148	.701	18.227B	.000	4.168b	.043	.067	.796	3.373	.068	.085	.771	.000	.987
	SxT	.285	.594	.899	.345	.475	.492	.000	1.000	.225	.636	.163	.687	.442	.507
Tanyzer	Sex	2.358	.127	8.222F	.005	.753	.387	2.455	.119	.190	.664	.427	.514	8.818F	.004
	Trt	13.443N	.000	1.316	.253	.284	.595	.298	.586	1.990	.161	.616	.434	2.828	.095
	SxT	.000	.989	.197	.658	.172	.679	.000	.997	.001	.973	.541	.463	.290	.591

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 137.

Unadjusted Premeasure Means for Basal vs I.T.A. Projects by Treatment

Project	Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Metropolitan Meaning	Metropolitan Listening	Pintner-Cunningham I.Q.
Fry	Basal	22.395	34.152	8.288*	16.128	9.263	9.644	40.334
	I.T.A.	21.397	29.778	6.477	13.329	9.450	8.802	37.990
Hahn	Basal	25.649	34.909	8.401	18.683	9.590	9.554	39.635
	I.T.A.	29.348	35.559	8.857	20.739	10.131	10.012	40.343
Hayes	Basal	18.600	29.767	8.843	13.645	8.455	8.547	37.905*
	I.T.A.	19.928	28.460	7.709	12.403	8.223	8.933	33.470
Mazurkiewicz	Basal	32.872	38.762**	12.999*	16.204	9.571	9.011	41.460
	I.T.A.	33.494	31.105	11.800	15.717	8.651	9.114	41.430
Tanyzer	Basal	24.835	37.378	10.897	12.952	8.958	9.712	38.665
	I.T.A.	32.964**	34.946	10.536	13.925	9.763	9.389	40.688

* indicates .05 level of significance
** indicates .01 level of significance

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Within Projects Analysis of Variance on Stanford Measures
for Basal vs I.T.A. Treatments

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Fry	Sex	1.026	.313	1.815	.180	2.678	.104	2.934	.089	.280	.598
	Trt	.142	.707	.845	.360	1.180	.279	.001	.973	.156	.693
	SxT	.441	.508	.092	.762	1.248	.266	.336	.563	.343	.559
Hahn	Sex	1.239	.268	.119	.731	5.084f	.026	.934	.335	.000	.983
	Trt	1.685	.197	.459	.499	.018	.894	.033	.856	.066	.798
	SxT	.081	.776	.119	.731	.011	.918	.011	.917	.062	.803
Hayes	Sex	.001	.970	.026	.873	.337	.562	.006	.937	.749	.388
	Trt	2.249	.136	.014	.905	.599	.440	.212	.646	1.318	.253
	SxT	.260	.611	.058	.810	.950	.331	.162	.688	.091	.764
Mazurk.	Sex	7.183F	.008	5.284f	.023	4.324f	.039	10.001F	.002	.249	.619
	Trt	.013	.908	.408	.524	.701	.404	1.945	.165	3.014	.085
	SxT	.029	.865	.001	.973	.055	.815	.023	.879	.228	.634
Tanyzer	Sex	1.426	.234	.265	.607	2.621	.108	2.362	.127	.461	.498
	Trt	40.837N	.000	14.004N	.000	19.076N	.000	8.673N	.004	3.519	.063
	SxT	.495	.483	.152	.697	.390	.533	.722	.397	.005	.944

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 137.

Within Projects Analysis of Variance on Stanford Measures

for Basal vs I.T.A. Treatments

(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Fry	Sex	2.590	.110	3.929f	.049	.375	.541	1.204	.274	1.038	.310
	Trt	5.703b	.018	1.416	.236	.010	.920	.835	.362	1.386	.241
	SxT	.259	.611	1.897	.171	.631	.428	.630	.429	1.660	.200
Hahn	Sex	5.956f	.016	5.651f	.019	1.329	.251	1.109	.294	.140	.146
	Trt	6.796b	.010	1.454	.230	.222	.638	.580	.448	.044	.834
	SxT	.140	.709	.028	.867	.014	.907	.069	.794	.021	.886
Hayes	Sex	.005	.941	1.126	.290	.155	.694	.050	.824	.641	.425
	Trt	3.069	.082	.761	.384	.206	.651	.151	.698	.213	.645
	SxT	.410	.523	.251	.617	.053	.818	.002	.963	.348	.556
Mazurk.	Sex	1.345	.248	9.984F	.002	4.964f	.028	5.174f	.024	12.906F	.000
	Trt	28.699B	.000	3.376	.068	4.191b	.043	.128	.721	3.651	.058
	SxT	.229	.633	.253	.616	.473	.493	.037	.849	.504	.479
Tanyzer	Sex	2.626	.107	1.900	.170	2.031	.156	2.801	.096	5.165f	.025
	Trt	2.991	.086	17.048N	.000	24.444N	.000	23.095N	.000	11.080N	.001
	SxT	.369	.545	.750	.388	.146	.703	.179	.673	.001	.971

NOTE: Significant difference favoring I.T.A. indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 137.

Within Projects Analysis of Variance on Premeasures for Basal vs Language Experience Treatments

Project	Eff.	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
		F	P	F	P	F	P	F	P	F	P	F	P	F	P
	Sex	.918	.340	1.947	.166	.077	.781	.877	.351	1.243	.267	.403	.527	.076	.783
Cleland	Trt	3.819	.053	.361	.549	.091	.764	6.277b	.014	1.655	.201	.288	.592	.481	.490
	SxT	.272	.603	.201	.655	.032	.858	.761	.385	.704	.403	.515	.475	.001	.982
	Sex	.884	.349	2.898	.092	.186	.667	4.143f	.044	1.901	.171	.319	.573	.063	.803
Hahn	Trt	.997	.320	1.842	.178	.733	.394	.263	.609	1.935	.167	.001	.976	1.160	.284
	SxT	.028	.867	.052	.821	.003	.956	.000	.996	.316	.575	.001	.974	.017	.896
	Sex	1.357	.247	2.909	.091	.004	.947	2.896	.092	2.182	.143	.007	.932	2.395	.125
Stauffer	Trt	8.687N	.004	.423	.517	1.351	.248	15.366B	.000	1.732	.191	1.185	.279	.007	.931
	SxT	.032	.858	.081	.777	.088	.767	.273	.603	.177	.675	.708	.402	.424	.517

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .05 level.

Unadjusted Premeasure Means for Basal vs Language Experience Projects by Treatment

Project	Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Metropolitan Meaning	Metropolitan Listening	Pintner-Cunningham I.Q.
Cleland	Basal	26.076	35.993	10.348	21.411*	8.926	9.576	38.139
	LE	20.916	34.581	10.583	16.998	8.184	9.338	36.958
Hahn	Basal	25.649	34.909	8.401	18.683	9.590	9.554	39.635
	LE	28.176	37.987	9.035	17.918	10.324	9.572	41.365
Stauffer	Basal	14.881	27.499	7.468	20.239**	7.611	8.559	37.175
	LE	22.468**	28.989	8.353	13.510	8.351	9.029	37.032

* indicates .05 level of significance
** indicates .01 level of significance

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Language Experience Treatments

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Cleland	Sex	.543	.463	.306	.581	.755	.387	.235	.629	.629	.429
	Trt	1.552	.216	.026	.872	.208	.649	.230	.632	.569	.452
	SxT	.201	.655	.021	.884	.029	.865	1.160	.284	.394	.532
Hahn	Sex	.390	.534	1.231	.270	4.192f	.043	.483	.489	.053	.818
	Trt	3.179	.078	2.535	.114	2.558	.113	1.472	.228	1.290	.259
	SxT	.417	.520	.223	.638	.031	.860	.131	.718	.000	.991
Stauffer	Sex	1.343	.249	.861	.355	1.427	.235	2.246	.137	.013	.911
	Trt	9.248N	.003	1.154	.285	4.062n	.046	.958	.330	1.743	.190
	SxT	.626	.431	.000	.994	.182	.670	.004	.947	.584	.446

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level.

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Language Experience Treatments
(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Cleland	Sex	.449	.504	3.967f	.049	.140	.709	.143	.706	.516	.474
	Trt	.825	.366	.255	.615	.616	.434	.886	.349	.000	.996
	SxT	.258	.613	.310	.579	.053	.818	.693	.407	.047	.829
Hahn	Sex	3.331	.071	3.691	.057	.338	.562	.172	.680	.862	.355
	Trt	1.880	.173	1.706	.194	1.160	.284	.809	.370	.755	.387
	SxT	.424	.516	.029	.865	.088	.768	.127	.723	.034	.854
Stauffer	Sex	2.136	.147	3.455	.066	1.903	.171	.908	.343	1.855	.176
	Trt	4.163n	.044	2.040	.156	1.028	.313	2.948	.089	3.320	.071
	SxT	.293	.590	.718	.399	.004	.949	.027	.871	.238	.626

NOTE: Significant differences favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level.

Within Projects Analysis of Covariance on Stanford Measures
for Basal vs Language Experience Treatments (7 covariates)

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Cleland	Sex	.079	.779	.238	.627	.096	.758	.242	.624	5.241m	.024
	Trt	8.550N	.004	1.735	.191	4.758n	.032	.386	.536	9.890N	.002
	SxT	.019	.892	.104	.748	.003	.955	1.109	.295	.350	.555
Hahn	Sex	.024	.878	.053	.818	4.639f	.034	.082	.776	2.397	.125
	Trt	1.032	.312	.545	.462	.498	.482	.051	.822	.016	.900
	SxT	.833	.364	.302	.584	.123	.726	.522	.472	.017	.896
Stauffer	Sex	.751	.388	.009	.924	.320	.573	.343	.560	2.261	.136
	Trt	3.142	.079	.314	.577	.553	.459	.361	.550	.437	.510
	SxT	.734	.393	.100	.752	.183	.670	.099	.754	1.148	.287

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal 1; denominator, 96.

Within Projects Analysis of Covariance on Stanford Measures for Basal vs Language Experience Treatments (7 covariates)

(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Cleland	Sex	.224	.637	1.935	.167	.011	.916	.359	.550	.009	.923
	Trt	.398	.530	2.690	.104	5.284n	.024	.161	.689	4.324n	.040
	SxT	.279	.539	.231	.632	.010	.922	.406	.526	.044	.833
Hahn	Sex	4.193f	.043	1.343	.249	.095	.759	1.184	.279	.043	.835
	Trt	.213	.646	.248	.620	.018	.893	.042	.838	.001	.977
	SxT	.621	.433	.134	.716	.212	.646	.493	.484	.118	.732
Stauffer	Sex	1.572	.213	1.118	.293	.542	.464	.075	.785	.379	.539
	Trt	1.984	.162	.354	.553	.003	.958	.611	.436	1.064	.305
	SxT	.322	.572	.650	.422	.026	.871	.046	.830	.381	.539

NOTE: Significant difference favoring Language Experience indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. One asterisk indicates .05 level of significance; two asterisks, .01 level. Numerator degrees of freedom equal 1; denominator, 96.

Within Projects Analysis of Variance on Premeasures for Basal vs Linguistic Treatments

Project	Eff.	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
		F	P	F	P	F	P	F	P	F	P	F	P	F	P
Ruddell	Sex	.103	.748	.454	.502	.165	.685	.000	.985	.153	.696	.317	.575	.001	.975
	Trt	.425	.516	1.399	.240	.255	.615	.082	.775	1.528	.220	4.142b	.045	.233	.630
	SxT	.000	.992	.029	.865	.001	.976	.363	.549	.102	.751	.020	.887	.183	.670
Schneyer	Sex	.545	.462	.086	.770	.006	.937	.255	.615	.797	.375	.012	.911	.514	.476
	Trt	1.056	.307	.174	.678	.050	.824	2.649	.107	.003	.954	.148	.701	.002	.965
	SxT	.101	.752	.095	.759	.248	.619	.000	.990	.253	.616	.236	.628	.265	.608
Sheldon	Sex	.305	.582	1.307	.256	.319	.573	1.649	.203	.115	.735	.901	.345	.583	.447
	Trt	3.491	.065	.429	.514	1.507	.223	1.952	.166	2.892	.093	2.482	.119	1.239	.269
	SxT	.106	.745	.283	.596	.031	.861	.017	.897	.000	.999	.009	.924	.005	.941

NOTE: Significant difference favoring Linguistic indicated by N or n,Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator 86.

Unadjusted Treatment Means on Premeasures for Basal vs Linguistic Treatments by Treatment

Project	Treatment	Phonemes	Letter Names	Learning Rate	Identical Forms	Metropolitan Meaning	Metropolitan Listening	Pintner-Cunningham I.Q.
Ruddell	Basal	22.134	31.063	11.937	14.690	8.998	9.671*	37.898
	Linguistic	25.403	37.650	11.320	13.827	7.445	8.028	35.892
Schneyer	Basal	19.848	30.099	9.095	12.584	7.399	8.100	30.021
	Linguistic	16.752	28.705	8.935	15.455	7.372	7.915	30.086
Sheldon	Basal	35.633	37.420	10.959	18.486	11.197	10.532	42.577
	Linguistic	29.370	35.043	9.959	15.706	9.757	9.686	39.508

* indicates .05 level of significance
** indicates .01 level of significance

Within Projects Analysis of Variance on Stanford Measures for Basal vs Linguistic Treatments

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Ruddell	Sex	.150	.699	.018	.893	.309	.580	.222	.639	.000	.988
	Trt	2.317	.132	.081	.776	.012	.912	.224	.637	.013	.908
	SxT	.059	.809	.013	.908	.012	.912	.005	.944	.045	.832
Schneyer	Sex	.143	.707	.283	.596	.593	.443	.499	.482	.110	.741
	Trt	.381	.538	.366	.546	.512	.476	.146	.703	1.673	.199
	SxT	.023	.880	.132	.717	.000	.997	.000	.985	.318	.575
Sheldon	Sex	.360	.550	.198	.658	.667	.416	.513	.476	.079	.780
	Trt	.059	.809	.002	.960	4.591b	.035	.430	.514	4.658b	.034
	SxT	.163	.687	.074	.786	.051	.821	.016	.900	.128	.722

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 86.

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Linguistic Treatments
(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
Ruddell	Sex	.700	.405	.005	.946	.013	.910	.013	.908	.037	.348
	Trt	.571	.452	.275	.601	.069	.793	1.106	.296	.001	.975
	SxT	.002	.963	.003	.959	.071	.790	.185	.668	.033	.856
Schneyer	Sex	.395	.531	.749	.389	.815	.369	.162	.689	.365	.547
	Trt	1.024	.314	.147	.702	.874	.352	2.266	.136	.001	.983
	SxT	.061	.805	.025	.874	.017	.898	.032	.859	.005	.942
Sheldon	Sex	.714	.400	1.528	.220	.859	.356	.623	.432	.674	.414
	Trt	3.050	.084	.457	.501	2.324	.131	1.024	.314	.005	.946
	SxT	.026	.873	.030	.864	.003	.953	.001	.973	.131	.718

NOTE: Significant difference favoring Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 86.

Within Projects Analysis of Variance on Premeasures for Basal vs Phonic/Linguistic Treatments

Project	Eff.	Phonemes		Letter Names		Learning Rate		Identical Forms		Metropolitan Meaning		Metropolitan Listening		Pintner-Cunningham I.Q.	
		F	P	F	P	F	P	F	P	F	P	F	P	F	P
Hayes	Sex	.281	.599	2.280	.139	.796	.377	.003	.957	1.514	.226	1.201	.280	.816	.372
	Trt	.784	.381	7.482B	.009	.032	.860	4.342b	.043	14.067B	.001	2.691	.109	5.997b	.017
	SxT	.913	.345	.065	.800	.542	.466	.011	.915	.348	.559	.446	.508	.007	.935
Tanyzer	Sex	2.536	.119	7.120f	.011	4.858f	.033	8.346F	.006	.441	.525	2.115	.153	6.837f	.012
	Trt	26.638N	.000	7.288n	.010	9.391N	.004	38.119N	.000	9.772N	.003	.003	.954	5.600n	.023
	SxT	.001	.981	.531	.471	.718	.402	2.570	.117	.017	.898	.082	.777	.792	.379

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Phonic/Linguistic Treatments

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Hayes	Sex	.774	.384	.808	.374	1.723	.120	.877	.354	.011	.918
	Trt	4.849n	.033	.000	.990	.009	.924	.623	.434	1.646	.207
	SxT	.082	.776	.294	.590	.142	.708	.014	.905	.066	.799
Tanyzer	Sex	2.670	.110	1.675	.203	5.275f	.027	6.906f	.012	.024	.877
	Trt	51.246N	.000	30.038N	.000	17.205N	.000	19.748N	.000	10.944N	.002
	SxT	.028	.868	.008	.930	.038	.846	.108	.744	.265	.610

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equals 1; denominator, 41.

Within Projects Analysis of Variance on Stanford Measures
for Basal vs Phonic/Linguistic Treatments

(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
	Sex	1.461	.234	1.690	.201	.093	.762	.254	.617	.666	.419
Hayes	Trt	.362	.551	.868	.357	.272	.605	2.116	.153	1.462	.233
	SxT	.152	.698	.190	.665	.121	.730	.396	.533	.239	.627
	Sex	3.359	.074	5.694f	.022	3.752	.060	2.271	.140	6.065f	.018
Tanyzer	Trt	12.938B	.001	18.037B	.000	26.127B	.000	8.974B	.005	13.588B	.001
	SxT	.004	.949	.004	.948	.028	.867	.077	.783	.219	.643

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case signifies .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator,41.

Within Projects Analysis of Covariance on Stanford Measures
for Basal vs Phonic/Linguistic Treatments (7 covariates)

Project	Effect	Word Recognition 1		Word Recognition 2		Paragraph Meaning 1		Paragraph Meaning 2		Vocabulary 1	
		F	P	F	P	F	P	F	P	F	P
Hayes	Sex	.009	.924	.125	.726	.131	.719	.072	.789	1.492	.230
	Trt	28.269N	.000	6.696n	.013	3.667	.064	2.567	.118	1.496	.230
	SxT	.002	.968	.146	.705	.717	.403	.155	.696	.000	.984
Tanyzer	Sex	.041	.841	.026	.874	.197	.660	1.506	.228	3.483	.071
	Trt	13.250N	.001	7.219n	.011	2.179	.149	3.895	.057	1.322	.258
	SxT	.097	.964	.041	.841	.138	.713	.154	.697	.155	.696

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 34. Covariates are all seven premeasures.

Within Projects Analysis of Covariance on Stanford Measures for Basal vs Phonic/Linguistic Treatments (7 covariates)

(continued)

Project	Effect	Spelling 1		Spelling 2		Word Study Skills 1		Word Study Skills 2		Language 2	
		F	P	F	P	F	P	F	P	F	P
	Sex	.238	.628	.195	.662	.185	.670	.122	.729	1.044	.314
Hayes	Trt	8.251N	.007	5.743n	.022	7.897N	.008	8.496N	.006	.951	.336
	SxT	.018	.895	.843	.365	.075	.786	.056	.814	.802	.377
	Sex	.002	.964	.568	.456	.675	.417	.018	.894	.031	.860
Tanyzer	Trt	.109	.744	3.634	.065	3.339	.076	.088	.768	7.219n	.011
	SxT	.015	.903	.020	.888	.045	.833	.002	.964	1.554	.221

NOTE: Significant difference favoring Phonic/Linguistic indicated by N or n, Basal by B or b, females by F or f, males by M or m. Capital letter in each case indicates .01 level of significance; lower case letter, .05 level. Numerator degrees of freedom equal 1; denominator, 34. Covariates are all seven premeasures.

APPENDIX C

DESCRIPTIVE DATA BY PROJECT AND TREATMENT

Variable	Abbreviation
Pintner-Cunningham Raw Score	I.Q.
Murphy-Durrell Phonemes	M.D. Ph.
Murphy-Durrell Letter Names	M.D.L.N.
Murphy-Durrell Learning Rate	M.D.L.R.
Thurstone Pattern Copying Test	T.P.C.
Thurstone-Jeffrey Identical Forms Test	T. Id. F.
Metropolitan Meaning	Met. Mean.
Metropolitan Listening	Met. List.
Stanford Word Reading - First Grade	Stan. W.R. 1
Stanford Word Reading - Second Grade	Stan. W.R. 2
Stanford Paragraph Meaning - First Grade	Stan. P.M. 1
Stanford Paragraph Meaning - Second Grade	Stan. P.M. 2
Stanford Vocabulary - First Grade	Stan. Vocab. 1
Stanford Science and Social Studies Concepts - Second Grade	Stan. S.S.S. 2
Stanford Spelling - First Grade	Stan. Spell. 1
Stanford Spelling - Second Grade	Stan. Spell. 2
Stanford Word Study Skills - First Grade	Stan. W.S. 1
Stanford Word Study Skills - Second Grade	Stan. W.S. 2
Stanford Language - Second Grade	Stan. Lang. 2
Stanford Arithmetic Computation - Second Grade	Arith. Com. 2
Stanford Arithmetic Concepts - Second Grade	Arith. Con. 2
Pupil Absence - Second Grade (total number of days absent)	Pupil Absence 2
San Diego Pupil Attitude Inventory - Second Grade	San Diego 2
Books Read Completely in Second Grade	Books Read Comp. 2
Books Partially Read in Second Grade	Books Read Partial. 2
Number of Library Books in Child's Classroom - Second Grade	Library Books 2
Second Grade Teacher Rating The sum of two independent ratings which were made concerning the teacher's overall competency (the lowest number which can be recorded is two and the highest is ten) Rating Scale: 1, Incompetent; 2, Poor; 3, Adequate; 4, Good; 5, Excellent.	Teacher Rating 2
Average Minutes per Week of Instructional Time in Reading in Second Grade	Reading Time 2
Average Minutes per Week of All Supportive Instructional Time in Second Grade	Supplemt. Time 2
Total Average Minutes per Week of Direct and Supportive Instructional Time in Second Grade	Total Time 2

PROJ			I.Q.		M.D. Ph.		M.D.L.N.		M.D.L.R.		T. P.C.		T. Id.F.		Met. Mean.		Met. List.	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CLELAND	Language Experience	N	77	93	77	93	77	93	77	93	77	93	77	93	77	93	77	93
		$\bar{X}$	37.2	36.8	21.1	22.3	33.6	37.3	10.4	10.4	23.5	21.3	16.8	17.1	8.7	8.3	9.5	9.3
	Basal	N	109	103	109	103	109	103	109	103	109	103	109	103	109	103	109	103
		$\bar{X}$	38.0	38.7	25.5	26.0	35.8	37.1	10.4	10.5	21.8	22.0	20.4	22.1	9.5	8.3	10.0	9.4
FRY	Diacritical Marking System	N	63	57	63	57	63	57	63	57	63	57	63	57	63	57	63	57
		$\bar{X}$	38.2	38.9	18.4	22.5	25.9	29.5	7.1	7.7	5.5	6.4	14.8	16.2	9.2	9.1	9.2	9.6
	Basal	N	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
		$\bar{X}$	38.1	43.2	20.4	25.0	29.9	37.1	7.9	8.5	6.0	8.4	15.2	17.3	8.9	9.6	9.3	10.1
	Initial Teaching Alphabet	N	56	55	56	55	56	55	56	55	56	55	56	55	56	55	56	55
		$\bar{X}$	36.5	40.1	20.5	25.0	27.2	33.9	6.3	7.9	4.6	7.7	13.8	15.6	9.1	9.1	8.7	9.0
HAHN	Basal	N	109	101	111	100	111	100	111	100	109	101	108	102	109	102	109	102
		$\bar{X}$	40.0	39.3	24.7	26.6	34.0	36.2	8.3	8.6	10.5	9.0	17.4	20.0	9.8	9.3	9.3	9.5
	Initial Teaching Alphabet	N	116	94	116	94	116	95	116	94	114	95	114	96	113	93	113	93
		$\bar{X}$	39.5	41.1	27.6	29.8	33.9	37.9	8.9	9.1	10.9	11.8	20.7	22.4	10.4	10.0	9.4	10.4
	Language Experience	N	94	104	94	111	95	111	95	111	95	109	95	109	95	107	95	107
		$\bar{X}$	40.7	41.4	26.5	29.6	35.1	40.0	8.6	9.3	11.1	10.8	16.8	18.7	10.8	10.2	9.3	9.6
		N																
		$\bar{X}$																

PROJ			I.Q.		M.D. Ph.		M.D.L.N.		M.D.L.R.		T. P.C.		T. Id.F.		Met. Mean.		Met. List.	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HAYES	Basal	N	27	25	27	25	27	25	27	25	27	25	27	25	27	25	27	25
		$\bar{X}$	35.4	37.4	18.1	16.4	25.6	29.7	8.1	8.5	13.9	13.2	12.9	12.8	8.5	7.7	7.8	8.6
	Phonic/Linguistic	N	37	38	37	38	37	38	37	38	37	38	37	38	37	38	37	38
		$\bar{X}$	33.2	34.8	14.9	17.8	21.5	24.5	8.1	9.4	7.1	5.8	11.6	11.5	6.9	6.3	7.9	8.0
	Basal + Phonics	N	39	43	39	43	39	43	39	43	39	43	39	43	39	43	39	43
		$\bar{X}$	30.7	32.8	11.7	17.0	21.2	23.0	6.2	8.2	6.8	4.9	9.4	12.5	6.7	6.5	7.5	8.0
	Initial Teaching Alphabet	N	38	44	38	44	38	44	38	44	38	44	38	44	38	44	38	44
		$\bar{X}$	33.7	34.1	19.6	21.5	27.7	30.4	8.1	7.1	6.1	5.0	12.0	12.7	8.6	8.2	9.3	8.6
MAZURK	Initial Teaching Alphabet	N	97	86	97	86	97	86	97	86	97	86	97	86	97	86	97	86
		$\bar{X}$	41.6	42.5	32.0	36.4	29.5	34.1	11.6	12.4	17.7	18.2	15.6	16.5	9.1	8.8	9.0	9.2
	Basal	N	124	114	124	114	124	114	124	114	124	114	124	114	124	114	124	114
		$\bar{X}$	40.1	42.3	29.9	35.2	37.2	40.4	12.7	13.1	17.7	18.9	15.1	16.6	9.8	9.4	9.0	9.1
RUDDELL	Basal	N	49	39	50	41	50	41	49	40	49	41	49	40	49	39	49	39
		$\bar{X}$	38.4	38.4	21.6	24.2	31.4	32.9	12.1	11.9	15.3	12.9	17.6	13.7	9.9	8.5	10.2	9.4
	Linguistic	N	39	29	39	30	39	30	37	30	39	30	39	30	38	30	38	30
		$\bar{X}$	36.0	34.8	23.0	23.2	33.5	37.2	10.8	11.1	13.1	14.3	14.9	17.2	8.4	6.8	8.5	7.9
		N																
		$\bar{X}$																

PROJ			I.Q.		M.D. Ph.		M.D.L.N.		M.D.L.R.		T. P.C.		T. Id. F.		Met. Mean.		Met. List.	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
SCHNEYER	Basal	N	109	113	109	113	109	113	109	113	109	113	109	113	109	113	109	113
		X̄	29.6	34.6	19.5	24.6	31.0	35.3	9.3	10.1	12.4	14.4	13.1	14.8	7.9	8.1	8.1	8.8
	Linguistic	N	134	126	134	126	134	126	134	126	134	126	134	126	134	126	134	126
		X̄	31.2	31.3	17.1	18.6	30.3	29.9	9.3	9.1	12.3	11.0	15.2	17.3	8.2	7.1	8.2	7.9
SHELDON	Basal	N	57	51	57	51	57	51	57	51	57	51	57	51	57	51	57	51
		X̄	40.9	43.7	33.5	36.6	33.8	40.9	10.2	11.3	9.7	10.6	16.4	19.9	11.0	11.0	10.3	10.6
	Linguistic	N	122	123	122	123	122	123	122	123	122	123	122	123	122	123	122	123
		X̄	38.3	40.7	27.3	30.9	32.9	36.3	9.6	10.3	8.9	10.4	14.9	16.6	9.9	9.7	9.4	10.0
STAUFFER	Basal	N	100	81	95	80	95	80	95	80	99	81	99	81	96	79	96	79
		X̄	34.4	39.1	13.8	16.0	24.7	29.2	7.4	7.3	10.6	10.1	17.4	22.0	7.9	7.4	8.4	8.6
	Language Experience	N	101	98	100	97	100	97	100	97	100	95	100	95	100	94	100	94
		X̄	35.7	37.9	20.0	25.0	26.0	31.7	7.9	8.7	11.6	12.1	12.4	14.6	8.8	8.0	9.0	9.1
TANYZER	Phonic/Linguistic	N	90	71	90	71	90	71	90	71	90	71	90	71	90	71	90	71
		X̄	40.3	42.6	33.8	37.6	40.2	44.3	11.8	13.5	13.0	14.8	16.6	17.4	10.2	10.0	9.5	9.9
	Initial Teaching Alphabet	N	109	108	109	108	109	108	109	108	109	108	109	108	109	108	109	108
		X̄	39.0	42.2	31.0	34.5	32.2	37.3	10.3	11.4	11.4	14.0	12.5	15.4	9.8	9.7	9.3	9.4
	Basal	N	96	84	96	84	96	84	96	84	96	84	96	84	96	84	96	84
		X̄	35.9	40.9	23.7	26.5	34.4	40.1	10.8	11.2	11.9	13.3	11.2	14.1	8.9	8.8	9.3	10.0

PROJ			Stan. W.R. 1		Stan. W.R. 2		Stan. P.M. 1		Stan. P.M. 2		Stan. Vocab. 1		Stan. S.S.S. 2		Stan. Spell. 1		Stan. Spell. 2	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CLELAND	Language Experience	N	77	93	77	93	77	93	77	93	77	93	77	93	77	93	77	93
		X̄	26.1	26.6	22.4	22.5	28.1	29.0	36.5	38.4	26.6	25.1	22.2	19.7	16.4	17.3	18.2	21.2
	Basal	N	109	103	109	103	109	103	109	103	109	103	109	103	109	103	109	103
		X̄	23.8	24.0	22.0	22.1	26.7	27.3	38.6	36.5	25.5	23.6	20.5	17.4	17.5	17.8	17.5	18.9
FRY	Diacritical Marking System	N	63	57	53	56	63	57	53	56	63	57	53	56	63	57	53	56
		X̄	18.2	19.8	17.1	18.1	15.5	19.1	26.8	27.7	22.5	20.6	20.5	17.4	8.2	9.9	11.6	14.5
	Basal	N	48	48	40	47	48	48	40	47	48	48	40	47	48	48	40	47
		X̄	19.0	21.8	19.0	21.6	18.2	21.8	31.3	35.6	22.1	25.3	21.4	20.0	9.9	12.6	13.0	15.7
	Initial Teaching Alphabet	N	56	55	52	52	56	55	52	52	56	55	52	52	56	55	52	52
		X̄	19.9	22.2	20.3	22.3	15.7	20.6	30.2	34.9	22.9	22.7	21.2	19.2	6.9	9.1	14.5	18.8
HAHN	Basal	N	111	101	111	101	111	101	111	102	111	100	109	102	111	102	109	100
		X̄	21.4	22.5	18.9	19.8	19.3	22.5	29.8	32.1	21.4	21.1	20.0	18.5	11.8	14.0	12.8	15.5
	Initial Teaching Alphabet	N	114	94	112	93	112	94	110	90	115	92	112	89	113	92	112	90
		X̄	23.2	24.7	19.8	20.4	19.1	23.2	30.8	34.1	21.9	21.9	21.5	18.0	9.9	11.6	14.0	17.7
	Language Experience	N	95	110	95	109	95	110	94	110	95	110	95	110	95	109	95	110
		X̄	24.1	24.6	20.1	22.4	21.5	25.2	33.7	34.5	23.0	22.5	22.0	19.7	13.7	15.3	14.5	17.1
		N																
		X̄																

PROJ			Stan. W.R. 1		Stan. W.R. 2		Stan. P.M. 1		Stan. P.M. 2		Stan. Vocab. 1		Stan. S.S.S. 2		Stan. Spell. 1		Stan. Spell. 2	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HAYES	Basal	N	27	25	27	25	27	25	27	25	27	25	27	25	27	25	27	25
		X̄	21.3	22.2	21.1	21.1	22.1	26.0	34.7	36.2	24.1	23.5	21.4	19.5	11.9	12.4	14.1	17.2
	Phonic/Linguistic	N	37	38	37	38	37	38	37	38	37	38	37	38	37	38	37	38
		X̄	27.1	28.6	21.8	23.4	25.6	27.6	35.0	37.2	23.3	23.3	21.4	19.7	13.6	15.5	18.7	19.7
	Basal + Phonics	N	39	43	39	43	39	43	39	43	39	43	39	43	39	43	39	43
		X̄	19.9	21.0	17.9	20.0	18.0	22.7	31.6	35.7	19.4	20.1	18.5	16.9	10.2	12.7	12.7	18.0
	Initial Teaching Alphabet	N	38	44	38	44	38	44	38	44	38	44	38	44	38	44	38	44
		X̄	25.8	26.2	22.3	22.2	23.4	24.5	36.1	36.1	23.8	22.1	21.5	19.2	16.0	15.9	17.6	19.9
MAZURK	Initial Teaching Alphabet	N	97	86	92	83	97	86	92	83	97	86	91	82	97	86	91	81
		X̄	22.5	25.1	19.6	21.8	20.5	24.2	27.9	32.3	22.2	22.7	19.2	17.3	9.6	10.7	15.6	20.5
	Basal	N	124	114	114	111	124	114	113	111	124	114	116	110	124	114	116	110
		X̄	21.8	24.4	18.2	20.8	20.5	24.0	28.8	34.9	22.9	23.2	20.2	19.2	13.7	15.5	13.8	16.8
RUDDELL	Basal	N	48	40	50	41	48	40	50	40	49	40	-	1	48	40	49	40
		X̄	19.1	18.4	18.7	17.0	18.8	18.5	30.4	31.1	21.0	19.5	-	18.0	9.1	9.8	12.2	11.5
	Linguistic	N	39	30	39	30	39	30	39	30	39	30	14	9	39	30	39	29
		X̄	22.4	23.6	18.3	17.7	17.1	19.4	26.5	27.1	19.9	20.3	21.4	20.1	10.6	11.6	14.1	13.1
		N																
		X̄																

PROJ			Stan. W.R. 1		Stan. W.R. 2		Stan. P.M. 1		Stan. P.M. 2		Stan. Vocab. 1		Stan. S.S.S. 2		Stan. Spell. 1		Stan. Spell. 2	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
SCHNEYER	Basal	N	109	113	109	113	109	113	109	113	109	113	109	113	109	113	109	113
		X̄	18.7	21.3	16.4	19.7	18.1	22.3	27.4	32.5	20.3	23.5	18.4	18.4	10.5	13.2	12.1	15.7
	Linguistic	N	134	126	134	126	134	126	134	126	134	126	134	126	134	126	134	126
		X̄	17.9	18.2	16.2	16.6	16.3	17.9	25.8	28.2	19.2	18.6	18.2	15.9	9.6	9.8	11.6	12.8
SHELDON	Basal	N	55	50	57	51	55	50	57	51	55	50	57	50	55	50	57	51
		X̄	20.1	23.1	19.8	20.8	21.6	24.8	31.3	35.9	27.1	25.0	21.9	19.2	13.9	15.0	12.2	14.7
	Linguistic	N	122	123	121	123	122	123	121	122	122	122	121	122	122	123	121	122
		X̄	20.3	21.2	19.2	21.1	16.3	18.5	30.0	33.4	22.0	22.6	20.9	19.9	10.5	11.8	13.5	16.3
STAUFFER	Basal	N	100	81	100	81	100	81	100	81	100	81	100	81	100	81	99	81
		X̄	16.4	17.3	15.5	17.1	16.0	17.9	25.9	30.1	18.7	19.9	16.9	15.7	9.1	10.6	12.0	13.9
	Language Experience	N	101	98	101	98	101	98	101	98	101	98	101	98	101	98	101	98
		X̄	19.3	22.1	16.8	19.0	18.8	22.8	27.8	31.8	21.0	20.9	19.2	16.9	10.7	13.6	12.8	17.0
TANYZER	Phonic/Linguistic	N	90	71	83	68	90	71	83	68	90	71	85	67	90	71	85	68
		X̄	26.3	28.5	22.2	23.6	21.6	26.7	35.6	39.9	25.3	24.6	21.5	19.2	13.7	15.9	17.3	20.3
	Initial Teaching Alphabet	N	109	108	105	104	109	108	105	104	109	108	105	104	109	108	105	104
		X̄	25.3	26.5	22.1	22.7	22.9	25.5	34.7	37.5	22.4	23.3	20.5	19.5	11.6	13.0	18.1	19.8
	Basal	N	96	84	92	82	96	84	92	82	96	84	91	82	96	84	91	82
		X̄	16.8	19.2	17.3	18.5	14.7	18.4	27.2	32.5	20.6	21.2	19.8	18.8	9.8	11.7	12.0	15.0

PROJ			Stan. W.S. 1		Stan. W.S. 2		Stan. Lang. 2		Arith. Com. 2		Arith. Con. 2		Pupil Absence 2		San Diego 2			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CLELAND	Language Experience	N	77	93	77	93	77	93	77	93	77	93	77	93	77	93		
		$\bar{X}$	42.9	42.9	41.4	42.2	44.3	44.2	27.0	27.2	23.5	22.0	12.2	14.2	16.6	19.6		
	Basal	N	109	103	109	103	109	103	109	103	109	103	109	103	109	103		
		$\bar{X}$	40.5	40.8	43.3	41.7	42.5	42.4	27.1	26.7	23.3	20.3	14.4	15.4	17.1	18.5		
FRY	Diacritical Marking System	N	63	57	53	56	53	56	53	56	53	56	51	49	53	56		
		$\bar{X}$	33.6	35.3	36.2	37.6	34.9	37.3	18.5	19.7	15.6	15.9	6.0	6.9	36.2	37.6		
	Basal	N	48	48	40	47	40	47	40	47	40	47	48	48	40	47		
		$\bar{X}$	32.5	36.6	38.6	42.2	40.1	40.8	20.7	21.9	19.0	19.0	5.8	6.0	38.6	42.2		
	Initial Teaching Alphabet	N	56	55	52	52	52	52	52	52	52	52	54	55	52	52		
		$\bar{X}$	34.6	37.3	40.5	45.8	35.3	39.4	18.4	19.0	16.5	17.2	7.1	5.5	40.5	45.8		
HAHN	Basal	N	111	100	110	101	111	102	109	101	109	101	77	75	92	87		
		$\bar{X}$	37.5	39.0	36.8	39.3	36.3	38.9	20.0	23.6	19.9	20.6	9.0	9.0	17.6	19.9		
	Initial Teaching Alphabet	N	113	92	112	90	113	91	113	91	112	92	83	73	106	91		
		$\bar{X}$	38.5	40.4	39.2	42.7	36.2	40.2	20.1	22.0	20.8	20.4	9.8	9.6	16.8	18.6		
	Language Experience	N	95	110	94	110	95	109	95	110	95	107	74	76	84	98		
		$\bar{X}$	39.8	40.5	40.7	40.4	38.6	40.7	21.7	22.0	22.3	20.7	10.5	9.6	16.8	19.6		
		N																
		$\bar{X}$																

PROJ			Stan. W.S. 1		Stan. W.S. 2		Stan. Lang. 2		Arith. Com. 2		Arith. Con. 2		Pupil Absence 2		San Diego 2			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HAYES	Basal	N	27	25	27	25	27	25	27	25	27	25	27	25	27	25		
		X̄	39.3	38.2	37.6	37.7	38.8	43.3	24.1	24.3	24.3	22.5	7.9	8.3	37.6	37.7		
	Phonic/Linguistic	N	37	38	37	38	37	38	37	38	37	38	37	38	37	38		
		X̄	41.9	42.6	44.8	47.3	40.1	41.2	24.4	23.8	23.2	20.4	7.4	8.1	44.8	47.3		
	Basal + Phonics	N	39	43	39	43	39	43	39	43	39	43	39	43	39	43		
		X̄	35.2	37.7	34.0	38.2	35.4	39.7	21.4	23.3	21.1	21.7	7.2	8.0	34.0	38.2		
	Initial Teaching Alphabet	N	38	44	38	44	38	44	38	44	38	44	38	44	38	44		
		X̄	41.9	41.9	41.4	42.2	40.5	42.3	25.7	25.9	22.5	21.7	8.8	10.8	41.4	42.2		
MAZURK	Initial Teaching Alphabet	N	97	86	93	82	93	81	93	81	93	81	97	86	93	82		
		X̄	37.0	41.1	40.3	43.5	35.8	39.5	13.6	15.1	16.4	15.7	7.3	7.7	40.3	43.5		
	Basal	N	124	114	117	112	117	112	117	111	117	108	120	113	117	112		
		X̄	39.5	41.7	39.7	43.3	37.0	42.2	16.2	17.0	16.1	17.2	7.4	7.2	39.7	43.3		
RUDDELL	Basal	N	48	40	50	40	50	41	50	41	50	41	-	-	48	40		
		X̄	35.2	33.3	39.3	37.0	38.2	35.7	12.7	12.5	1.9	2.2	-	-	19.6	19.0		
	Linguistic	N	39	30	39	30	38	29	39	30	39	30	-	-	36	29		
		X̄	35.6	35.0	31.5	33.1	37.3	36.7	7.8	8.0	-	-	-	-	18.4	19.8		
		N																
		X̄																

PROJ			Stan. W.S. 1		Stan. W.S. 2		Stan. Lang. 2		Arith. Com. 2		Arith. Con. 2		Pupil Absence 2		San Siego 2			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
SCHNEYER	Basal	N	109	113	109	113	109	113	109	113	109	113	109	113	109	113		
		$\bar{X}$	35.0	39.8	35.2	39.7	37.2	40.5	22.2	27.5	20.7	21.2	11.2	12.1	35.2	39.7		
	Linguistic	N	134	126	134	126	134	126	134	126	134	126	134	126	134	126		
		$\bar{X}$	33.3	34.5	30.9	31.4	36.8	38.9	21.1	21.3	18.5	16.8	10.2	11.7	30.9	31.4		
SHELDON	Basal	N	55	50	57	51	55	51	56	51	57	51	57	51	57	50		
		$\bar{X}$	41.0	44.2	38.5	41.5	38.3	41.8	22.7	22.8	21.9	21.1	9.8	9.1	16.0	18.5		
	Linguistic	N	122	123	121	121	121	121	121	123	120	121	120	122	121	122		
		$\bar{X}$	36.7	39.6	36.1	39.0	39.3	42.1	23.0	22.6	21.2	21.6	6.3	7.5	17.1	19.2		
STAUFFER	Basal	N	100	81	99	81	99	81	100	81	100	81	99	81	97	80		
		$\bar{X}$	34.4	37.0	33.6	35.9	33.1	35.7	22.5	23.0	18.3	18.0	7.8	7.5	19.2	20.9		
	Language Experience	N	101	98	101	98	101	98	101	98	101	98	101	98	100	96		
		$\bar{X}$	35.8	39.3	37.3	39.7	36.0	40.1	18.1	21.7	19.9	19.3	8.0	9.0	18.9	20.8		
TANYZER	Phonic/Linguistic	N	90	71	85	68	85	68	84	68	85	68	89	68	85	68		
		$\bar{X}$	41.8	45.2	41.1	45.1	42.8	48.6	24.3	28.5	23.1	23.2	10.9	8.1	41.1	45.1		
	Initial Teaching Alphabet	N	109	108	104	104	105	103	104	104	105	104	105	102	104	104		
		$\bar{X}$	41.8	44.0	44.2	49.6	41.3	46.4	26.2	27.7	23.3	23.5	11.7	12.9	44.2	49.6		
	Basal	N	96	84	92	81	91	82	89	82	89	82	92	82	92	81		
		$\bar{X}$	33.4	36.1	34.7	37.6	36.9	41.0	23.9	25.3	19.3	19.6	10.2	10.6	34.7	37.6		

PROJ			Books Read Comp. 2		Books Read Partial. 2		Library Books 2		Teacher Rating 2		Reading Time 2		Supplemt. Time 2		Total Time 2			
			M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
CLELAND	Language Experience	**N**	77	92	77	92	77	92	77	92	77	92	77	92	77	92		
		$\bar{X}$	.7	1.1	45.5	43.2	.8	.3	6.6	6.4	119	124	130	132	248	255		
	Basal	**N**	109	101	109	101	109	101	109	101	109	101	109	101	109	101		
		$\bar{X}$	1.1	1.1	46.4	42.0	.9	.8	6.8	6.7	135	133	77.7	77.1	213	210		
FRY	Diacritical Marking System	**N**	48	49	36	39	-	-	57	56	62	57	62	57	62	57		
		$\bar{X}$	4.9	6.2	.8	.7	-	-	7.0	7.1	84.5	91.8	64.8	57.1	149	149		
	Basal	**N**	32	24	24	23	-	-	41	45	45	47	45	48	45	48		
		$\bar{X}$	4.1	4.9	.9	.4	-	-	7.1	7.6	80.9	79.2	42.3	43.4	123	123		
	Initial Teaching Alphabet	**N**	51	54	48	50	-	-	52	54	51	46	51	46	51	46		
		$\bar{X}$	5.1	10.2	1.3	1.9	-	-	7.9	8.0	74.6	67.6	49.8	57.4	125	125		
HAHN	Basal	**N**	73	72	58	55	96	93	84	85	-	-	-	-	-	-		
		$\bar{X}$	7.1	9.2	1.3	1.4	85.0	83.7	3.9	3.9	-	-	-	-	-	-		
	Initial Teaching Alphabet	**N**	93	78	84	64	117	95	118	96	-	-	-	-	-	-		
		$\bar{X}$	6.6	9.0	.8	1.1	80.1	79.8	3.3	3.4	-	-	-	-	-	-		
	Language Experience	**N**	80	97	69	80	96	111	87	101	-	-	-	-	-	-		
		$\bar{X}$	13.0	17.9	1.4	1.0	97.2	97.5	3.7	3.7	-	-	-	-	-	-		
		N																
		$\bar{X}$																

PROJ			Books Read Comp. 2		Books Read Partial. 2		Library Books 2		Teacher Rating 2		Reading Time 2		Supplemt. Time 2		Total Time 2			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HAYES	Basal	N	27	25	27	25	27	25	27	25	27	25	27	25	27	25		
		$\bar{X}$	10.2	12.7	1.0	2.0	10.9	11.7	8.7	8.9	530	530	587	569	559	550		
	Phonic/Linguistic	N	37	38	37	38	37	38	37	38	37	38	37	38	37	38		
		$\bar{X}$	9.5	10.9	.6	.3	11.6	11.5	7.3	7.2	530	530	533	575	532	553		
	Basal + Phonics	N	39	43	39	43	39	43	39	43	39	43	39	43	39	43		
		$\bar{X}$	13.8	13.7	1.4	1.2	10.6	10.6	5.6	5.8	530	530	259	264	394	396		
	Initial Teaching Alphabet	N	38	44	38	44	38	44	38	44	38	44	38	44	38	44		
		$\bar{X}$	4.0	6.3	.6	.4	11.1	11.1	7.8	7.6	530	530	290	304	410	417		
MAZURK	Initial Teaching Alphabet	N	-	-	95	86	95	86	97	86	91	83	80	72	80	72		
		$\bar{X}$	-	-	10.1	10.3	4.1	4.6	8.1	7.8	540	533	341	312	843	807		
	Basal	N	-	-	121	106	121	106	120	114	120	113	111	104	111	104		
		$\bar{X}$	-	-	10.2	10.2	4.1	4.5	6.6	6.9	542	560	331	335	864	870		
RUDDELL	Basal	N	38	32	38	32	-	-	50	41	50	41	50	41	50	41		
		$\bar{X}$	8.9	7.6	1.3	.5	-	-	8.6	8.1	300	300	300	300	600	600		
	Linguistic	N	27	19	27	19	-	-	39	30	39	30	39	30	39	30		
		$\bar{X}$	14.9	21.0	.5	.7	-	-	7.8	7.9	300	300	300	300	600	600		
		N																
		$\bar{X}$																

PROJ			Books Read Comp. 2		Books Read Partial. 2		Library Books 2		Teacher Rating 2		Reading Time 2		Supplemt. Time 2		Total Time 2			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
SCHNEYER	Basal	N	109	113	109	113	-	-	109	113	109	113	109	113	109	113		
		$\bar{X}$	5.1	7.6	1.1	1.4	-	-	8.3	8.5	107	106	68.3	72.4	175	179		
	Linguistic	N	134	126	134	126	-	-	134	126	134	126	134	126	134	126		
		$\bar{X}$	8.5	9.4	2.0	1.9	-	-	7.6	7.5	107	106	49.1	49.4	156	156		
SHELDON	Basal	N	57	51	57	51	-	-	57	51	57	51	57	51	57	51		
		$\bar{X}$	4.0	3.5	.5	.5	-	-	5.8	6.2	501	507	318	329	819	836		
	Linguistic	N	122	122	122	121	-	-	122	123	122	123	122	123	122	123		
		$\bar{X}$	6.8	7.8	.8	1.0	-	-	6.8	6.6	496	497	291	295	787	791		
STAUFFER	Basal	N	99	81	100	81	100	81	100	81	100	81	100	81	100	81		
		$\bar{X}$	3.6	4.2	-	-	41.2	41.0	7.5	7.4	556	560	327	313	882	874		
	Language Experience	N	99	96	99	96	89	89	101	98	101	98	101	98	101	98		
		$\bar{X}$	11.8	13.0	.3	.3	66.3	65.7	8.2	8.2	555	521	383	410	938	931		
TANYZER	Phonic/Linguistic	N	-	-	-	-	-	-	90	71	90	71	90	71	90	71		
		$\bar{X}$	-	-	-	-	-	-	8.2	8.2	235	224	336	327	571	551		
	Initial Teaching Alphabet	N	-	-	-	-	-	-	109	108	109	108	109	108	109	108		
		$\bar{X}$	-	-	-	-	-	-	10.0	10.0	452	449	311	299	762	748		
	Basal	N	-	-	-	-	-	-	96	84	96	84	96	84	96	84		
		$\bar{X}$	-	-	-	-	-	-	7.0	6.6	443	446	342	322	782	764		

APPENDIX D

PHONETICALLY REGULAR WORDS ORAL READING TEST

AND

GATES WORD PRONUNCIATION TEST

PHONETICALLY REGULAR WORDS ORAL READING TEST

Child's Name ______________________ Date ______________

School ____________________ Room ________ Code Number ______

Examiner __________________ Number of words read correctly _____

1. nap
2. pen
3. hid
4. job
5. rug
6. shade
7. drive
8. joke
9. mule
10. plain
11. hay
12. keen
13. least
14. loan
15. show
16. walk
17. haul
18. jaw
19. soil
20. joy
21. frown
22. trout
23. term
24. curl
25. birch
26. rare
27. star
28. porch
29. smooth
30. shook

Directions: Have pupil read words from one copy while examiner makes another copy. Do not give pupil a second chance but accept immediate self-correction. Let every student try the whole first column. If he gets two words correct from word number six on, let him try the whole second column.

GATES WORD PRONUNCIATION TEST

EXAMINER'S COPY

Directions: Have the child read the words out loud. Tell him you would like him to read some words for you. If he fails the first time, ask him to try the word again. Continue until ten consecutive words have been missed. As the words become difficult, special care should be taken to encourage the child. The score is one point for each word correctly pronounced on the first trial, one-half point for each word correctly pronounced on the second trial. (Note: 9 1/2 correct would be scored as 10.)

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1. so
2. we
3. as
4. go
5. the
6. not
7. how
8. may
9. king
10. here
11. grow
12. late
13. every
14. about
15. paper
16. blind
17. window
18. family
19. perhaps
20. plaster
21. passenger
22. wander
23. interest
24. chocolate
25. dispute
26. portion
27. conductor
28. brightness
29. intelligent
30. construct
31. position
32. profitable
33. irregular
34. schoolmaster
35. lamentation
36. community
37. satisfactory
38. illustrious
39. superstition
40. affectionate

Child's name: ______________________________

Test date ___.___ ___

Examiner: ______________________________

Birth date ___ ___ ___

Age: _____